

October 2000  
Volume 68 No 10



# Amateur Radio

Awards  
Contests

*plus*

*Divisional & Club News  
ALARA  
& regular columns*



## Jamboree On The Air

Photo courtesy of  
Northern Star Services

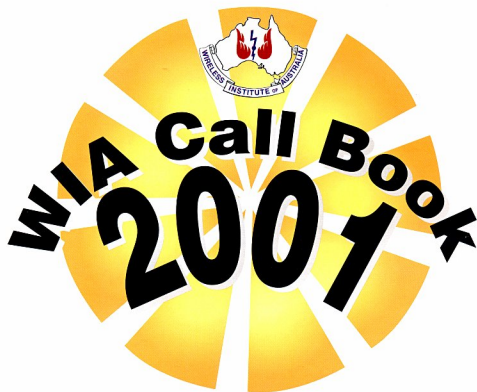
### Build the Funway 80

Transform a \$15 Kit into  
an 80m Receiver

- ★ A Superhet Receiver for  
Three HF Bands
- ★ PIC Controlled Transmitter

### Visit The Skoux Club

Gil Sones VK3AUI  
**Technical Abstracts:**  
**Giant LF Loop Stick**  
**Giovannini D2T**  
**Antenna**



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SOON**

*It is more than a call book, it's a Yearbook, the WIA Yearbook!*

*The "WIA Call Book 2001" will  
soon be available from  
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Volume 68  
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# Amateur Radio

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## Our cover this month

North Coast scout Andrew Cowperthwaite, 10, talks to scouts in South Australia during the 1999 Jamboree On The Air. With him is Scott Hyland, 10, and Kirsty Smith, 15. They are members of the 1st Goonellabah Scout Troup.

The operators assisting were Duncan Raymont VK2DLR and Leith Martin VK2EA. JOTA also operated a group from the Dunoon area with operators Bill Cross VK2VJC and Bill Parker VK2KDI assisting.

Photo first appeared in *The Northern Star*, 19/10/99. Used here by permission

### Contributions to Amateur Radio

Amateur Radio is a forum for WIA members' amateur radio experiments, experiences opinions and news. Manuscripts with drawings and or photos are always welcome and will be considered for publication.

Articles on disc or email are especially welcome. The WIA cannot be responsible for loss or damage to any material. A pamphlet, How to write for Amateur Radio is available from the Federal Office on receipt of a stamped self-addressed envelope.

### Back Issues

Back issues are available directly from the WIA Federal Office (until stocks are exhausted, at \$4.00 each (including postage within Australia) to members.

### Photostat copies

When back issues are no longer available, photocopies of articles are available to members at \$2.50 each (plus an additional \$2 for each additional issue in which the article appears).

### Disclaimer

The opinions expressed in this publication do not necessarily reflect the official view of the WIA and the WIA cannot be held responsible for incorrect information published.

## Amateur Radio Service

A radiocommunication service for the purpose of self-training, intercommunication and technical investigation carried out by amateurs; that is, by duly authorised persons interested in radio technique solely with a personal aim and without pecuniary interest.

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Founded 1910

Representing  
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Member of the  
International Amateur Radio Union

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## Editor's Comment

### Spectrum: Use it or lose it in the Olympic aftermath

Sydney and Australia are reluctantly returning to normal after the Olympics, but how much if any of the 70cm band we will eventually regain access to is uncertain. We have to be continually aware that our hold on spectrum is very dependent on our being seen (heard?) to use it. It is very much a case of populate it or lose it.

Five weeks in the UK saw me with limited petrol, lots of Roman ruins and 10<sup>th</sup> century churches. I have learnt that to properly keep on top of this job I needed a laptop with a gig or so of hard drive. Sorry for the omissions etc. which have crept into September and October AR. I continually learn that I must continually adapt.

Much takes place this month and next in the Contest/activity area. The ZL/VK Oceania contest is on October 7<sup>th</sup> and 14<sup>th</sup> so there is still time to participate. The ALARA Contest is on Saturday November 11<sup>th</sup> and JOTA is

on Saturday 21 Sunday 22<sup>nd</sup> October, with perhaps some activity on the Friday night. JOTA uses many modes, the most popular being SSB on HF and FM on VHF and then Packet. JOTA also operates on the Internet. Please help present the good face of Amateur radio to these young people. Local groups always need extra help or have suddenly realised JOTA is next week. A VHF mobile with a whip in an urban area can always provide a few contacts.

I thought Solar Sunspot maximum was almost upon us, but have been told it could have been in August. We should get the most out of our stations to work DX for our own satisfaction or to help others achieve their ambitions. You cannot be a communicator on your own.

I have been asked to locate a program, which gives bearings from a designated location to capital cities round the world. Can anyone point me in the right direction?

73 Colwyn VK5UE



The five day IARU Region 3 Conference held in Darwin recently was a great success. Delegates from all of the Asia/Pacific region attended and progress was made on many important matters affecting amateur radio in this area.

Threats to our continuing use of the 70 cms band are intensifying. For some time the spectrum around 434 MHz has been available to class-licensed devices known as Low Interference Potential Devices (LIPDs). The WIA representations to the ACA that LIPDs should not be permitted in this part of the spectrum have so far have been rejected. ACA see LIPDs as a 'public benefit' and consider they should be allowed to continue operation on frequencies throughout the spectrum.

Now, a new, serious restriction is to be placed on this band. From next year, a digital land mobile network is to begin in WA around Perth. The band between 420 MHz and 430 MHz will cease to be available to the amateur radio service within 200 km of Perth.

And there is worse to follow, as similar systems will probably soon appear in the other major areas of Australia.

We could soon lose the use of the bottom 10 MHz of 70 cms nationally where we now operate many fixed links, amateur television and similar strategic activities. The WIA is working with the ACA on this threat, seeking to mitigate the impact on our traditional operations. WIA's technical advisory committee is also examining our band plans to determine a possible long-term solution.

Many commercial organisations, here and worldwide, are hungry for spectrum in the 400 to 500 MHz region. In Australia the amateur radio service is only a secondary user of 420 to 450 MHz with Defence having primary use. For many years we have operated problem-free under this arrangement.

The proposed introduction of digital land mobile radio systems will change this happy balance.

Peter Naish

WIA Federal President.



# IARU R3 sets course for future direction

The eleventh IARU Region 3 (R3) Conference held in Darwin recently was busy. Much discussion was about protecting and furthering amateur radio within the region, and globally.

The region's 17 member societies willingly tackled the numerous issues facing the Amateur Service and Amateur Satellite Service in the 21st century.

Conference chairman, and WIA President, Peter Naish VK2BPN, commented on the positive approach taken at the week-long conference, saying it clearly showed that IARU R3 spoke with a single voice.

ITU Radio Regulation s25, currently requiring Morse code proficiency in amateur licence testing, generated considerable discussion at Working Group 3 (WRC-03).

At the end of the day, the general intent of a WIA input paper on the ITU RR s25, which is to be reviewed at WRC-03, were adopted. The Conference resolved to support lowering the amateur licence Morse code test speed temporarily, and the ultimate removal of Morse as an ITU licence requirement.

At the final plenary session a WIA motion, seconded SARTS, read:

IARU Region 3 strongly supports Morse code as an effective and efficient mode of communication. However, it believes that the position of Morse as a qualifying criterion for a HF amateur licence is not relevant to the healthy future of amateur radio. Therefore:

1. That IARU Region 3 urges member societies to seek, as an interim measure, the reduction of all Morse code testing speeds to five words per minute.
2. That setting aside any previous relevant decisions of earlier Conferences, a policy of the removal of Morse code testing as an ITU requirement for an amateur licence to operate on frequencies below 30 MHz be adopted by IARU Region 3.
3. Further, we recommend that the Administrative Council adopt the above position as IARU policy.

This passed, ARRL voting against, and HARTS, who three years ago supported retention of Morse Code, abstaining.

Another ITU RRs25 related motion

was the preliminary draft recommendation for WRC-03 (M-AOQ, ITU-R Document 8A/TEMP/91-E), which includes "Radio Telegraphy" as an Operating Skill for the amateur licence.

The concern was that "Operating Skills" could be mis-understood, and was wrongly seen by some as requiring the retention of Morse code telegraphy skills.

Delegates heard that in ITU terminology, Radio Telegraphy meant all digital transmission modes. A motion, proposed R5GB, seconded ARRL, instructed the R3 representatives on IARU Administrative Council to replace M-AOQ term "Operating Skills" with "Methods of Communication".

The conference noted crowding in the 40 metre band, particularly in countries with narrow allocations, and the IARU objective of obtaining an exclusive worldwide 7MHz allocation of no less than 300 kHz, was reaffirmed. The conference instructed the Directors of IARU R3 to treat this objective as a highest priority, and R3 member societies were urged to give support.

Emergency and disaster communications traditionally provided by the Amateur Service should be strengthened by the Conference recommending the establishment of a regional committee for disaster communications. It proposes to appoint R3 disaster communications coordinators, identify the recurring needs for disaster communications and those deployable resources for international assistance in event of a disaster.

The Conference also gave its support for seeking a band allocation around 5MHz, and to consider defining HF band segments (not 10, 18 or 24MHz) for use during international disaster emergency communications. It was noted that IARU R2 has addressed this in its band plans.

## Among many other resolutions were:

- **Harmonisation of licensing in IARU R3.** A new position will continue surveying member societies on their amateur licence syllabuses and examination standards.
- **Monitoring of interference from non-amateur transmissions to amateur**

**satellites.** The objective is to establish a series of terrestrial monitors, similar to the IARU Monitoring System (Intruder Watch) to gather information on intruders so action can be taken against them.

- **Internet based amateur licence education,** and on-demand computerised licence testing, now available in Australia and New Zealand.
- **LIPDs** An awareness of the problems of so-called Low Interference Potential Devices (LIPDs), and to lobby against their licensing on the 70cm band, particularly where amateur repeater activity occurs.
- **Self assessment** Radio societies to lobby their national administrations to adopt self-assessment for amateur stations to enable them to meet Electromagnetic radiation (EMR) standards, with education programs for radio amateurs.
- **Low Frequency band** The seeking of an amateur allocation for a Low Frequency band, either 165-190kHz and/or 135.7-137.8kHz. IARU policy is to pursue LF bands in all regions.
- **High speed data** The emergence of high speed data technology, eg xDSL, and its intrusion into amateur bands.

Six radio amateurs to the IARU Monitoring System (Intruder Watch) were recognised with certificates commending them for their long term efforts. They were: Rohan Wahrich ZL1CVK, Gordon Loveday VK4KAL, B.L. Manohar VU2UR, Isamu Kobayashi JA0AD, C.C. Robertson VK4AKX, and N. Yatheendran 9V1JY.

A final matter was the election of the IARU R3 directors for the next three years. They are Fred Johnson ZL1AMJ, Peter Naish VK2BPN, Yong S. Park HL1IFM, Yoshiji Sekido J11OEJ, and KC Selvadasa 9V1UV. The directors appointed Fred ZL1AMJ as chairman.

The IARU Conference in 2003 will be hosted by CTARL and held in Taiwan.

**Jim Linton, VK3PC**

WIA Media Officer for IARU Region 3  
Conference, Darwin, Australia)

# Build the Funway 80

## Transform a \$15 kit into an 80 metre receiver

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The beginner wishing to hear HF on-air amateur activity is confronted with two choices. Either buy a set or build one from scratch. Both options have their pros and cons. Building a receiver is fun but the parts can be hard to obtain and results are by no means guaranteed.

Now there's another choice. Build the Funway 80 (Photo One). Part kit, part homebrew, the Funway 80 is your key to 80 metre listening enjoyment. Because many parts come in a \$15 kit, construction costs are kept low. Most components are mounted on the printed circuit board that comes with the kit. The chance of constructor error is reduced compared to a set built from scratch. It all adds up to a set that's cheap, easy to build and likely to work first time.



Photo One: Front view of the Funway 80 Receiver.

The kit on which the Funway 80 is based is a Dick Smith Funway 2 Shortwave Receiver kit for beginners (K-2640). The kit is a tuned radio frequency (TRF) set for the HF bands. Specified frequency coverage is 11 to 35 MHz.

The set includes a one transistor RF amplifier stage. This is followed by a single tuned circuit and diode detector (Figure One). A 4007 digital IC biased to operate in linear mode amplifies the audio to drive a speaker. This stage is not shown in the diagram.

TRF receivers have many shortcomings that make amateur reception difficult. The first is that they are designed to receive AM - now seldom used by amateurs. Secondly, the diode envelope detector normally used is poor at detecting weak signals. Thirdly, because all selectivity is provided by just one tuned circuit at the received frequency, incoming signals cannot always be separated. The absence of bandspread (provided either

electrically or mechanically) is another factor making many simple receivers difficult to use.

All these limitations must be overcome to properly receive amateur signals. The changes described, though simple, convert the set from TRF to direct conversion and allow vastly better amateur reception.

What the modifications achieve

### 1. Reception of SSB and CW signals.

This was achieved by converting the diode envelope detector into a product detector. This is very easy and requires just two additional components.

The product detector needs a signal on the frequency to which the set is tuned in order to operate. This is provided by the one transistor oscillator circuit shown in Figure Two. It covers 3.5 to 3.7 MHz with one half-turn of the tuning knob.

2. Improved sensitivity. Another benefit of the diode product detector is its

improved sensitivity over the envelope detector that it replaced. Sensitivity is now fully adequate for the 3.5 MHz band.

### 3. Better selectivity. There are two aspects to consider here - audio selectivity and RF selectivity.

Because direct conversion receivers have no crystal filters or IF amplifier stages, their close-signal selectivity is determined in the audio stage. Changing component values in the audio amplifier stage alters the receiver's audio selectivity. Wiring a 0.001 uF capacitor across the 500k preset volume control provided a worthwhile narrowing of the amplifier's audio response and thus improved selectivity.

RF selectivity is also important. This is because there are hundreds of strong signals present at the antenna and their presence can reduce receiver performance. A good tuned circuit greatly reduces the strength

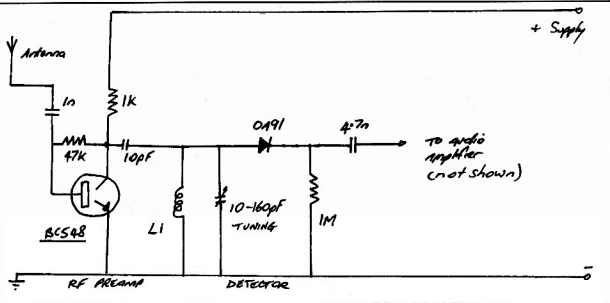


Figure One: Schematic diagram of original front-end

of unwanted signals, while allowing desired signals (in the 3.5 MHz band) to pass.

The tuned circuit following the RF preamplifier stage has been modified to resonate at 3.5 MHz. The kit's original tuning control becomes a 'peak' control in the modified design. It should be re-adjusted with every 40-50 kHz movement of the tuning control.

A low-pass filter ahead of the RF amplifier attenuates all signals above 4 MHz. This reduces pick-up of 7 MHz broadcast stations - a real possibility with simple direct conversion receivers and random wire antennas. Though the receiver will work without this filter, the improved performance is well worth the three components it requires.

4. **Bandspread for easier tuning.** SSB signals are much harder to tune in than AM signals. Most simple receivers that are satisfactory on AM are not easily usable on SSB. The use of a 'bandspread' or 'fine tuning' control allows coverage of small sections of the band, and thus better tuning of SSB signals.

5. **RF gain control.** Many people prefer to have the volume set high and reduce RF gain on loud signals. A trimpot is supplied in the original kit as the volume control. It was decided to retain the pre-set trimpot and

include a panel-mounted RF gain control. This is normally set to maximum and wound back when strong signals are present.

## Construction

Purchase a copy of the Funway 2 book (B-2605) and the Shortwave receiver kit (K-2640). Assemble as instructed. Connect a wire antenna at least 10 metres long. At various times of the day tune around and explore what can be heard. You should hear at least one or two international stations, which may not be completely separable.

Once satisfied that the kit is working, perform the necessary tasks to allow it to tune 3.5 MHz SSB signals. The circuitry of the receiver's original front-end is reproduced at Figure One. Figure Two shows the modified front-end plus the new VFO. A suggested construction layout is shown in Figure Three.

Consider what type of box the receiver will be installed. The enclosure for the prototype (Photo Two) is made from single-sided printed circuit board material. Three pieces form a shallow U, with short braces to relieve pressure on soldered joints. The front panel in the prototype measured 152 x 165 mm. The sides were 152 x 73mm each. However, the use of a smaller front panel (152 x 152 mm) would allow standard-size blank boards to be used with a minimum of cutting and wastage.

It is suggested that modifications proceed in the following order:

### Constructing the variable frequency oscillator

The VFO is the only part of this project where significant new construction is required. Its job is to provide a stable signal capable of being varied between 3.5 and 3.7 MHz.

The VFO was built on a piece of printed circuit board material about 5 x 5 cm (Figure Four). This board was then soldered to the main chassis at two points for both mechanical support and electrical connection. Earthed parts were soldered straight to the board; unearthened connections were left hanging. This worked out to be quite mechanically stable in practice. An attempt was made to keep wires short. This succeeded in the prototype, except for the long lead to the fine tuning control.

To keep construction easy for first-time builders, a 10 uH RF choke was used in the VFO's tuned circuit. More experienced constructors could substitute their own coil (either air-wound or toroidal) in this spot, and perhaps gain improved frequency stability. Other measures that could be taken to aid stability include housing the VFO in a separate metal box within the receiver, using a three-terminal voltage regulator instead of the zener diode used, using only quality capacitors in the VFO circuit and substituting an air-

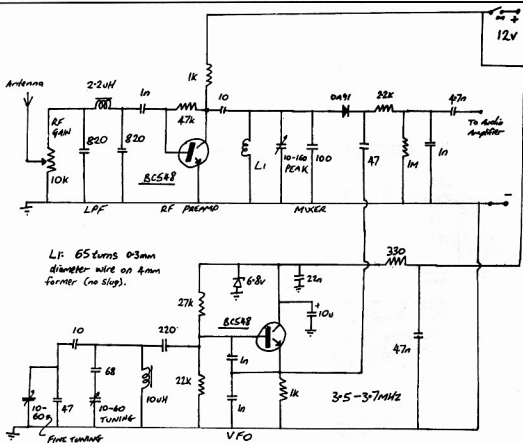


Figure Two: Schematic diagram of modified front-end and VFO.

spaced tuning capacitor (preferably with vernier reduction drive) for the plastic dielectric unit used.

Access to another 3.5 MHz receiver is desirable to test and align the VFO. Apply power (9 to 12 volt) to the VFO board and locate the signal in the receiver. Set the main tuning anticlockwise and the fine tuning control to mid-position. Adjust one of the trimmer capacitors on the rear of the main tuning control until the VFO's signal is 3.5 MHz. One trimmer capacitor will vary the frequency, but the other, being for the unused 60pF section, will not.

Those without a receiver can use an RF probe to test the oscillator's operation. A one transistor 3.58 MHz crystal oscillator can be handy for providing test signals and aligning the VFO when the receiver is complete.

#### Modifying the mixer tuned circuit

For this step, two components are needed. These are a new inductor and a 100pF disc ceramic capacitor.

Wind the coil (L1) on a 5mm former with no slug (eg DSE R-5020 former, R-5010 former base). L1 comprises 65 turns of 0.3mm enamelled copper wire. Wind this over about a 15mm length of the former, using several layers if necessary. Solder the ends of the wires onto two of the connections on the former base. The former base connections chosen should be those that will eventually mate with the circuit board - see later.

A way must be found to mount the coil on the receiver printed circuit board. Solder two PC board pins in the holes occupied by the old coil's leads. Place the short end of the pin in the board - length will be required to provide sufficient clearance for the coil.

The object of this exercise will be to have two pins on the coil base mating with the two circuit board pins. When a good position is found, make the two solder joints required. Cut the unused pins on the coil base short (with wire cutters) to allow an easy fit.

Mounting the 100pF capacitor is easy. Simply trim its leads and solder it on the underside of the printed circuit board beneath the variable capacitor.

#### Converting the diode detector to a mixer

Again two parts are needed - a 2.2k resistor and a 1nF disc ceramic capacitor. Wire the 1nF capacitor across the existing 1M resistor. A good spot to do this is underneath the circuit board.

Apply the soldering iron to the diode's cathode (banded end) connection under the circuit board and gently ease the cathode lead out. Either a small flat-blade screwdriver inserted under the diode or piece of enamelled copper wire will help here.

Insert one end of the 2.2k resistor into the hole left vacant by the diode's cathode. Solder and cut lead short. Solder the free end of the 2.2k resistor to the diode's cathode. Connect the VFO output (via the 47 pF coupling capacitor)

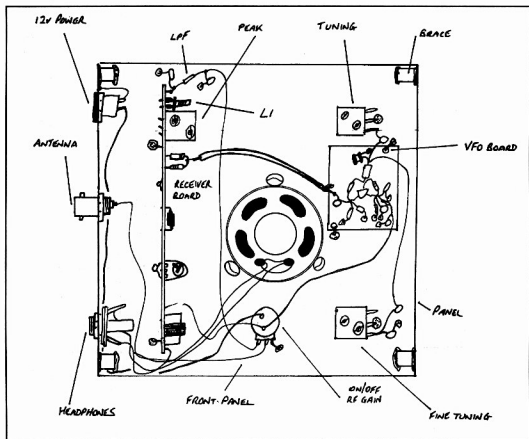


Figure Three: Internal construction of receiver, showing sockets, controls and layout of boards.

to this point with shielded cable. Either RG174 or thin audio cable will suffice.

At this point it should be possible to prove that the receiver works. Connecting heterodynes from 7 MHz broadcast stations will make reception unpleasant. Tune in a few SSB signals to prove that the receiver works. Annoying heterodynes from 7 MHz broadcast stations will make reception unpleasant. Also it will be difficult to separate stations closer than about 8 - 10 kHz because receiver selectivity is still poor. The following two modifications will make the receiver a better performer.

#### Adding extra front-end selectivity and the RF Gain control

The pi-network low-pass filter makes use of a commercially available 2.2 uH RF choke. The 820pF capacitors specified may be polystyrene, silvermica or disc ceramic. The components used in the filter are soldered to the copper rear of the PC board front panel near the RF preamp circuitry.

The potentiometer is mounted below the speaker on the front panel. It acts as the RF Gain control - desirable when strong signals are encountered. In the prototype this control was combined with the on/off power switch.

#### Modifying the audio amplifier

Very little needs to be done here. Just wire a 1nF disc ceramic capacitor across the volume control pre-set potentiometer. While you're at it, set the potentiometer to maximum audio gain (wiper nearest 4007 IC).

#### How it works

A direct conversion receiver consists of three main stages - mixer, variable frequency oscillator and audio amplifier. The variable frequency oscillator (VFO) is tuned to the desired frequency of reception. Two signals are applied to the mixer stage - the incoming signal and the signal from the VFO. Two signals are present at the output of the mixer. These are the sum of the mixed frequencies (around 7 MHz) and the differences

between the two frequencies (audio frequencies). It is these audio frequencies that are amplified sufficiently to produce a sound in the speaker.

Because direct conversion receivers have no filters at the intermediate frequency, selectivity is determined in the audio stages. Low pass and high pass filters are simple to build from op-amp ICs and can greatly improve the selectivity of a direct conversion receiver. However, unless complicated circuitry is added, direct conversion receivers will never be as selective as superhet receivers, at least for SSB signals.

#### Operation

Using the Funway 80 is very simple - switch the receiver on, set to maximum RF gain, set the peak control for maximum noise and tune around for a signal. The Fine Tuning control should initially be set to centre position. Once a signal is encountered, it should be

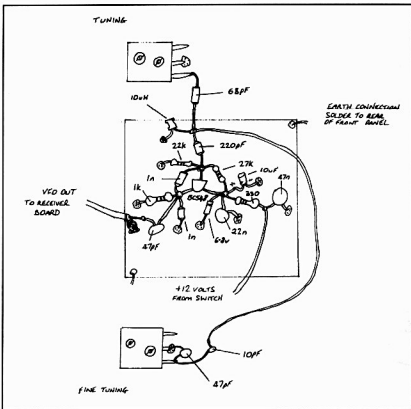


Figure Four: VFO board parts layout.

will be within about 200 or 300 kilometres. Weekly WIA news and callback sessions (operated by most Divisions) and club nets are good opportunities to test reception with a variety of stations on the one frequency.

## Further thoughts

The author considers that the Funway 80 is the absolute minimum design practical for 80 metre amateur reception. Once the basic receiver has been constructed, several modifications can be made to improve its performance and capabilities. Examples include:

**Better stability on 3.5 MHz:** This involves accepting reduced frequency coverage (3.500 - 3.620 MHz only) in exchange for the superior stability of a 3.58 MHz ceramic resonator local oscillator. Circuits of suitable variable ceramic resonator oscillators have appeared in past issues of *Amateur Radio* and *Lo-Key*.

**7 MHz reception:** Change the resonant frequency of the bandpass filter and the pi-network to pass 7 MHz signals. In this case the second harmonic of the VFO is used to provide reception of 7 MHz signals.

**Improved selectivity and strong-signal performance.** Good selectivity requires the addition of audio filtering to restrict the audio response to 300 - 3000 Hz. Better strong signal performance can be achieved by using a more elaborate mixer circuit.

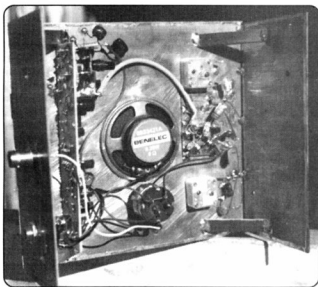
The above changes will improve the quality of reception possible on this set. However, the builder seeking a genuine high-performance receiver should start with a new design, rather than modify the set described here. Such a receiver (to be called the DC-2000) is being developed and will later be described in these pages.

## Reference:

Dick Smith's *Funway into Electronics* Volume Two, p108.

at

**Photo Two:** Inside the Funway 80 Receiver. The main receiver board is mounted vertically and appears left of the speaker. The VFO is directly right of the speaker. The upper tuning capacitor is the main tuning, and the lower capacitor is the fine tuning. Immediately below the speaker is the on/off and RF gain switchpot.



adjusted for best clarity. Wind back the RF Gain control if strong signals are encountered.

An outdoor antenna is required for best reception. An eighty metre dipole or random length wire at least 10 metres

long is suggested. Reception of stations up to 500 to 1000 kilometres should be routine on a set such as this during the evening. During the day 80 metres suffers from high ionospheric absorption, and stations heard, if any,

# A Superhet Receiver For Three HF Bands

Drew Diamond, VK3XU  
45 Gatters Road  
Wonga Park 3115

It is generally agreed that for an amateur wishing to build a receiver for one or more of the HF bands, a conventional well-made direct-conversion (DC) job will provide a surprising level of performance, particularly with regard to sensitivity. I confess a great fondness for the simple beauty of DC receivers, especially for CW reception. However, their lack of single-signal selectivity under crowded band conditions can be a little wearing at times. A number of radiomen have published plans for DC receivers which do provide single-signal performance, but at significantly greater complexity.



Photo 1. 3-band HF Receiver

After hundreds of hours of study and experiment, when cost, complexity and parts availability are considered, it seems to me that a receiver built around a good HF crystal filter probably still represents the most viable option for the amateur receiver builder. And a crystal filter forces the application of the superheterodyne principle.

The risk of internal spur production is significantly reduced if a single-conversion scheme is adopted, and that the oscillator operates "on the high side" (signal frequency + IF crystal filter frequency). With only one mixer (the weakest component in any superhet) in the path of strong unwanted signals, signal handling is also improved. Furthermore, a reasonably high IF crystal frequency will also help to keep spurs down. As 9 MHz is quite a common filter frequency, and just such a filter was on hand, an experimental model was built around that IF, later

changed to 8.867 MHz in the prototype to suit prevailing parts availability.

To keep things fairly simple, the prototype covers just three popular HF bands; 3.5, 7 and 14 MHz. We see now that the oscillator (VFO) must tune (in round figures) signal + 9 MHz. Therefore, for example, on 14 MHz the VFO must operate at  $14 + 9 = 23$  MHz. Perhaps surprisingly, it is quite possible to build, using ordinary parts, a switched LC VFO which has satisfactory stability and low phase-noise at these frequencies.

Another criticism of simple DC receivers is their lack of AGC. Popular DC circuits do not generally have circuitry which easily lends itself to the application of AGC. However, in a superhet there are additional points where gain control may be effectively used. For this model, AGC is applied to three key gain stages, which results in

quite acceptable automatic gain control.

Our English and American colleagues live in regions where there are many very powerful transmitters, and their circuits, particularly those we see in American journals, often reflect this problem by their complexity. In our area however, we are not usually bothered by front-end crushing signals, except perhaps from a near neighbor. So we can generally get away with an easy to use NE602 (Ref. 1) as mixer, which I have done here. No claims of "high-performance" are made for this model. Nevertheless, the receiver is sensitive, selective, has nice audio quality and is pleasant to operate. Only my near neighbor, some 900 m distant, causes significant overload problems, which is easily handled by insertion of some front-end attenuation. The prototype has the following measured characteristics:

Bands:	3.5 to 3.75, 7.0 to 7.3 and 14.0 to 14.5 MHz
Sensitivity:	0.2 microvolt for 10 dB S + N : N.
Selectivity:	Crystal filter pass-band 1.8 kHz at -6 dB points.
IF Rejection:	Worst case (on 7 MHz) -90 dB.
AGC:	AF output rises 6 dB from 3 microvolt to 30 microvolt input, then another 4 dB from 30 microvolt to 1 V.
Dynamic Range:	Third-order DR 80 dB.
Spurs:	Internal spurs just above receiver's noise floor at 3.545, 7090 and 14.180 MHz, which are inaudible with an antenna connected.

Table 1

## Circuit

In order to further simplify the circuit, yet provide a satisfactory level of performance, an ordinary mechanical frequency dial and LC VFO are used here. Conventional wafer switches, rather than diodes do the frequency band changing (Ref. 2).

To prevent unwanted out-of-band and IF signals from entering the mixer, a three-resonator band-pass filter (Refs. 3 and 4) is switched in for each frequency

range. The NE602 mixer chip has a noise figure of about 15 dB, so the prudent application of about that amount of RF gain is provided by an MFE131 (or similar) dual-gate MOSFET chosen for its high input impedance at gate 1, and suitability to RF gain control with an appropriate potential at gate 2.

An (SA)NE602(AN) does duty as mixer. Whilst not the strongest contemporary mixer, the 1.5 kohm input/output impedances, and ease of

oscillator drive (about 0.5 V p-p) make this chip agreeable to work with and a regular favourite. And you can buy two. In order to keep harmonics out of the mixer (thus minimum spur production), a separate local oscillator (VFO), injected at pin 6, is employed.

VFO signal is supplied by a conventional Hartley oscillator, maintained by an MPF102 followed by another MPF102 as buffer. For the 3.5 MHz band, a 2  $\mu$ H coil is resonated to supply a 12.367+ signal. On 7 MHz, a 2.6  $\mu$ H coil is paralleled with the 2  $\mu$ H so that 15.867+ is generated, and for 14 MHz, a 0.75  $\mu$ H coil is paralleled to give 22.867+ MHz (Ref. 5). VFO signal is passed through a 270 ohm resistor, which, with the capacitance of the connecting shielded cable forms a simple RC filter that greatly attenuates harmonic energy before it is applied to the mixer.

The 1.5 kohm input/output impedance of the NE602 is not an easy value to match into and out of a crystal filter. A filter impedance of about 500 ohms is more common and better to work with. An MPF102 serves as impedance transformer between the mixer and crystal filter, and again between filter and another NE602 as product detector (Ref. 6). These FETs also serve as gain-controlled stages for the application of AGC voltage.

The variable crystal BFO (VXBFO) frequency may be varied from one end of the crystal filter's pass-band to the other, thus permitting upper or lower sideband resolution, and, with the ability to place the BFO frequency anywhere in the filter's response; offers improved CW reception under crowded band conditions.

Product-detected audio signal is applied to a conventional LM741 and LM386 AF amplifier which provides adequate power to drive loudspeaker or 'phones. A pair of back-to-back silicon small-signal diodes are connected at the output of the '741 pre-amp to clip the amplitude of any transient noise spikes which are too brief for the AGC loop response (Ref. 7).

To generate the AGC voltage, a sample of detected signal is picked off at the output of the '741 pre-amp and applied to second LM386 wired as a DC amplifier. A pair of germanium diodes in voltage-doubler configuration supplies a negative DC signal to the '386

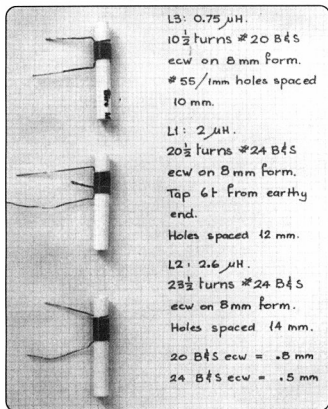


Photo 2. VFO Coils



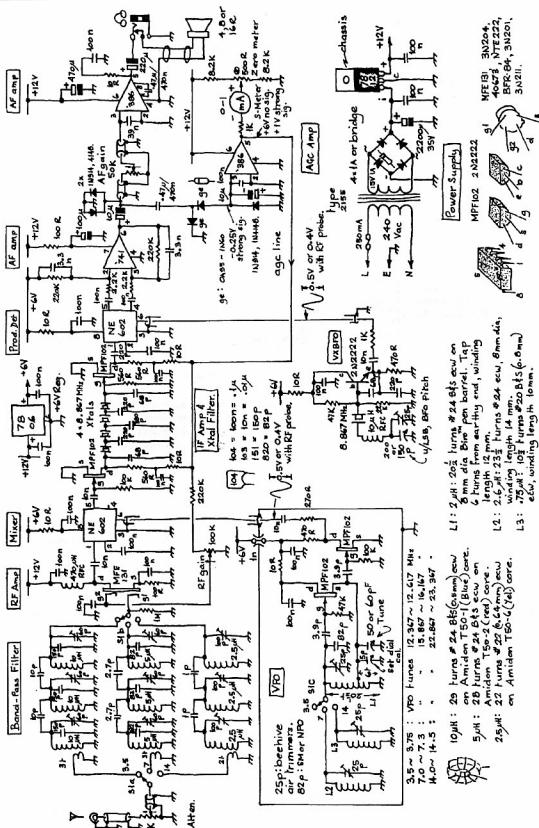


Figure 1

input which is proportional to the strength of the signal(s) passing through the crystal filter. When the signal from the antenna is less than about 0.5 uV, the output of the AGC '386 rests at about half the main rail, i.e. +6 V, and thus supplies drain voltage to the two FETs in the IF, and gate 2 voltage for the RF amp MOSFET. As input signal level is increased, or a stronger station is tuned in, the DC output of the '386 will fall, thereby proportionately reducing RF and IF gain. A 1 mA meter is connected in a virtual bridge to give a roughly logarithmic indication of signal strength. A 1 uV signal produces 0.1 mA deflection, and 50 uV ("S9") causes a 0.7 mA reading.

Current demand for the set is about 250 mA from the 12 V rail, including 50 mA each for the dial and S-meter lamps, and is just beyond the capacity of the smaller power transformers, which forces the use of a 1 A transformer for the power supply. The 15 Vac 1 A transformer, type 2155, is loading in this application. So too are the 7812 (12 V) and 7806 (6 V) regulator chips, which supply our +12 V and +6 V regulated supplies.

Harmonics from a 500 kHz calibrator signal, derived from an 8 MHz crystal oscillator integral to a 74HC4060 osc/divider chip provide a bottom band-edge dial check point.

## Construction

Most of the "electronic" components are available from our usual suppliers, but we can no longer obtain new off-the-shelf, slow-motion dial drives. However, they are not hard-to-get items, being generally available in various forms at hamfests etc. Although not intended for exact duplication, the following guidelines are given for the experienced home-brewer.

The type of dial chosen dictates the chassis/case form required. Everyone seems to have their own ideas about dials, so I will just say a few words about that shown, which was obtained from a defunct BC-221 frequency meter. These show up regularly at 'fests here (better to be re-born as a receiver dial than to rust away in some dusty shed). Mine was in pretty poor shape, and had to be stripped-down, cleaned, greased and re-assembled. In addition to providing an excellent anti-backlash 100 : 1 reduction, the drive output is at 90

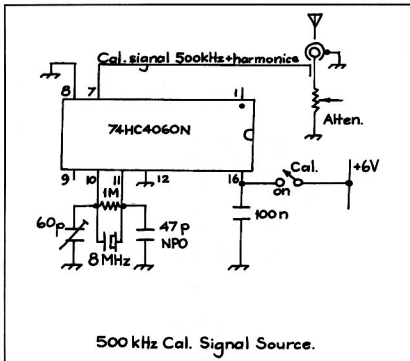


Figure 2

degrees to the knob spindle, thus allowing the main tuning capacitor to fit at right angles, and in turn permits the band switch shaft for the VFO coils and band-pass filters to run right through the VFO box.

Case dimensions are 190 x 220 x 120 mm LWH. If desiring to make another one, I would allow a bit more case width for the VFO box, which was a bit of a squeeze (I'm not a great fan of making things small, but it worked out in the end).

It is probably a good plan to build the bare bones VFO assembly first, and get that going, which, when working (should) give spur to press on with the remainder of the set. The VFO box measures 70 x 95 x 45 mm LWH. A lid is not essential. If size is not a problem, something slightly larger would ease things considerably. The VFO coil switch wafer and clicker-plate are mounted upon one wall of the VFO box, and an extension shaft coupler takes the switch action to two more wafers similarly mounted upon the main circuit board for selection of the appropriate band-pass filter.

Use a well-made variable capacitor of about 50 or 60 pF for the VFO. The

spindle must rotate easily and smoothly, otherwise there will probably be a hysteresis effect on the tuning, and perhaps some mechanical instability also. Interpose an effective flexible coupler between the capacitor and drive. If desired, include a small (about 5 pF, or one plate) variable capacitor for dial cal. adjustment. The 82 pF cap must be a silver mica or NPO type.

The VFO coils are wound upon 8 mm diameter tube material made from lengths of Biro (TM) plastic pen barrels (Photo 2). Drill a pair of 1.0 mm (#55) holes across the diameter at the distances shown. Windings may be secured with a small amount of super glue. Coils so made have been found to be quite stable and of high Q.

The VFO circuit was built using "ugly" (Ref. 8) style with reasonably short leads. The coil formers may be cemented to the base of the VFO box with super glue. My VFO had some significant frequency wobbles traced to poor grounding of the switch spindle in the clicker plate. The problem was remedied by fitting a stiff bronze wire across the spindle shaft under tension, soldered one end. A nylon coupler was fabricated to take the switch action

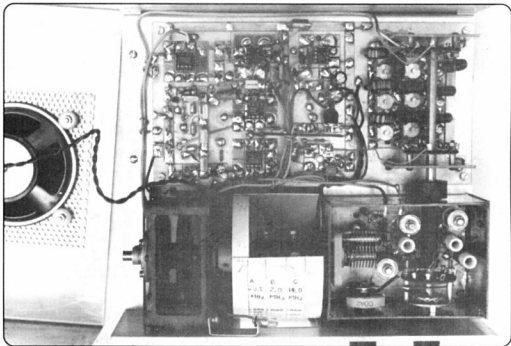


Photo 3. Main circuit board above chassis

through the VFO box to the band-pass filters located behind.

Main board, VXBFO, power supply and cal. signal board are all made "paddyboard" style (Ref. 9). "Ugly" style would also suit. Main board measures 220 x 120 mm, which accommodates the band-pass filters, RF amp, mixer, crystal filter, product detector, AF amp and AGC amp. Actual layout is not particularly critical, provided that signal and by-pass connections are reasonably short. Above chassis plan view of the VFO and main board is shown in Photo 3. The band-pass filters are at right, the RF amp is just left of the filter assembly at bottom, then signal flows clockwise around the board finishing at the AF output '386 just left of the filter assembly and above the RF amp. AGC '386 amp is the chip near the centre. Power supply, VXBFO and calibrator are located below chassis, as depicted in Photo 4.

If you have a likely-looking 9 MHz crystal filter waiting for an application, then this could be it. A 27.000 MHz crystal (3rd overtone 9 MHz) should drop straight into the VXBFO circuit. Otherwise, use the suggested ladder filter comprised of four 8.867 (twice colour burst-available from TV parts suppliers) plus one crystal for the VXBFO.

A rectangle of 1.2 mm al. sheet was made to wrap around the existing BC-221 dial drum (using a honey jar as mandrel with a rolling-pin action) after first filing off the rivets and removing the original 0-50 graduated scale. The dial drum was then lightly sanded and sprayed with two coats of white auto undercoat to receive appropriate calibration scales.

## Operation

If, as suggested, you have built the VFO first, connect regulated +6 Vdc to the VFO circuit. If an oscilloscope is available, observe the output waveform using a X10 probe. It should be a reasonable sine-wave of about 500 mV to 1 V p-p. Otherwise, apply RF probe and DMM and read about 400 mV. Connect the VFO output to a frequency counter (if available, otherwise, look for the signal on a general coverage receiver). With the main tuning cap. at full mesh it should be possible to set the 25 pF trim cap for a 12.367 (or 12.5 for a 9 MHz IF) signal in the 3.5 MHz switch position. Now step to the 7 MHz position and set its trim cap for 15.867 (16) MHz, then step to the 14 MHz position and adjust the trim cap in the 14 MHz position to generate 22.867 (23) MHz.

Any further alteration of the trim cap in the 3.5 MHz position will cause all three ranges to change.

When wiring is complete, check it all again- perhaps after a break for a cuppa. Apply power. Measure the +12 and +6 V rails. Advance the AF gain control- should hear a soft hiss and perhaps just a trace of hum at full gain. Measure the dc output of the AGC amp '386- should be about +6 V. Zero the S-meter with the 500 ohm trim pot. It should be possible now to sweep the VXBFO through the crystal filter's response. Adjust the 25 pF trim cap in the VXBFO so that a similar hiss sound (sssss-shooosh-sssss) is produced at each end of the 150 (or 200) pF VXBFO variable cap. travel (i.e. there is LSB and USB reception). If you can do this, it indicates that the set is "gainy", and probably working thus far.

Connect an antenna (or sig. gen. if you have one, set initially to about 30 uV) to the receiver's input. Set the receiver for about 3.6 MHz. Peak, and re-peak the three trim caps for the 3.5 MHz band filters. Set the receiver to about 7.1, then 14.2 MHz and do the same for those bands.

Even with a small antenna connected, the set should now sound lively. Signals will cause the S-meter to deflect

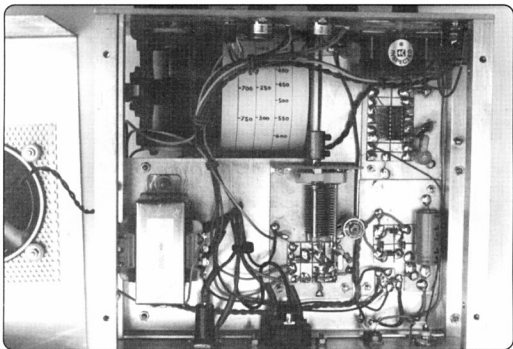


Photo 4. Below Chassis

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upwards, indicating that the AGC amp is working. Strong and weak signals should sound clean, without distortion or fuzziness.

### Parts

All of the ordinary components are available from our usual electronics parts suppliers such as Altronics, Dick Smiths and Jaycar. Additionally, near Melbourne we have; All Electronic Components (039662 3506), Radio Parts (039329 7888), Rockby Electronics (03 9562 8559, for MFE131's) and Electronic World (039723 3860). Electronic World also have NE (SA) 602AN's, Amidon cores, 8.867 MHz crystals, 1 nF feedthru caps, trim caps and 200 + 100 pF variable capacitors. See Hamads in AR for other Amidon vendors.

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ar

Turn  
off  
the TV,



Turn  
on  
the Rig!

# Spotlight on SWLing

by Robin L. Harwood VK7RH

transmissions of programs via shortwave. These commenced in the first week of September, coinciding with the Millennium summit at UN headquarters.

The transmissions are as follows:

French 1700-1715 6120 (Meyerton, 76 degrees to Madagascar), 17580 (Skelton, 180 degrees to W. Africa), and 21490 (Meyerton, 500 kW, 342 degrees to Kinshasa)

English 1730-1745 6125 (Meyerton, 5 degrees to S. Africa), 15265 (Woofterton, 140 degrees to E. Africa), and 17710 (Ascension, 65 degrees to Nigeria)

Arabic 1830-1845 15265 (Woofterton, 140 degrees to Cairo) and 17565 (Skelton, 180 degrees to Morocco and Algeria).

Each 15 min program includes five minutes of world news, a three-minute in-depth report on one of the main items in the news, and two three minute features targeted to various geographical regions and focusing on issues including gender, environment, health and development. These programs, along with UN broadcasts in Chinese, Russian and Spanish, will also be carried on satellite by Merlin for broadcast on partner stations around the world.

They would very much like to receive reports. They can be sent via E-mail at smithd@un.org, or by postal mail to: David Smith, UN Radio, Secretariat Building, Room S-850-M, New York, NY 10017, USA. Tel. 1-212-963-5201, FAX 1-212-963-1307.

Another station also made a surprise comeback to short wave at the beginning of August. The American Armed Forces Radio and Television Network (AFRTS) decided to suspend use of the INMARSAT communications satellite network and revert to HF frequencies. Several sites throughout the world have been nominated to transmit their unique output. Here is the proposed frequency table of AFRTS.

All transmission in the USB mode and all frequencies in kHz.

Location	Daytime	Evening
Key West, FL	12689.5	12689.5
RR, Puerto Rico	6458.5	6458.5
Sigonella, Sicily	4993.0	10940.0

Barrigada, Guam	13362.0	5765.0
Diego Garcia	12579.0	4319.0
Keflavik, Iceland	10320.0	6350.0
Lualualei, HI	6350.0	10320.0

These senders are operated by the US Navy and not by the AFRTS. E-mail reports can be sent to QSL@mediacen.navy.mil. So far the Florida, Puerto Rico and Sicilian sites have been heard although Hawaii and Diego Garcia in the Indian Ocean have been reported testing. My thanks to Larry Horne of Monitoring Times magazine. Incidentally the station in Sicily alerted people to the commencement of Shortwave relays by accidentally transmitting on exactly the band edge of 20 metres on 14,000 MHz.

Europe and North America will revert to standard time on the last Sunday of this month. This also is the time when the majority of broadcasting organisations alter their frequencies to allow for propagation and time scheduling. Expect major changes on that date. Australian states that normally switch over to daylight time at this time, made the changeover at the end of August, because of the recently completed Olympics.

There have been recent cat-and-mouse games between the Falun Gong and the Chinese authorities between 2200 & 2300 UTC. The Falun Gong station, Shijie Falun Dafa Guangbo Diantai, appears to have been testing on various out-of-band frequencies around the 11 and 13 MHz bands, noted 1 and 3 Sept on 12130, switching to 12140 at 2230. Both frequencies subjected to heavy noise jamming and interference from Chinese National Radio at times; the jammers noted to move from 12130 to 12140 a couple of minutes after the Falun Gong station, allowing a clear identification announcement to come through on the half hour, with a wrong frequency announcement of 9915 kHz! Location is unknown, but it may be related to Radio Free Asia, yet it may be very hard to determine.

Well that is all for this month. In next month's column, I hope to be reporting on the Olympics coverage over shortwave in the November column.

I do apologise for the non-appearance of the August column. It is a mystery where it, went as it just disappeared from the editorial desk to the printer.

A few months ago, I was awakened from my slumbers by a phone call at 2 a.m. asking me to switch over to my fax. I was very puzzled at the odd time for this request, as I could not make any sense from the caller, quickly deducing that the call was from outside Australia. The caller kept persisting and later in the day we found out that an engineer in Somaliland wanted some specific broadcasting equipment, making the assumption that I was a dealer or manufacturer of electronic equipment. He obtained the information from the address at the head of this column. His English comprehension was very poor and later several e-mails came through via Norway and I was able to inform him that I was only a listener. The proposed station was planned for the North Eastern part of the country.

Radio Australia has received an additional grant to extend broadcasting hours to South-East Asia, particularly Indonesia. The Communications Minister announced this in early August after a Cabinet meeting and it has been widely welcomed as many listeners in this region have had difficulties finding Radio Australia on shortwave. The Darwin transmitting site, which was acquired by British evangelical broadcaster, "Christian Voice" may also be used by Radio Australia. The negotiations were held in London and Melbourne but I do not know the final outcome. Thanks to Drew Diamond, VK3XU, for the clipping from the "Melbourne Age" newspaper.

Diana Janssen, one of the co-hosts of Media Network over Radio Netherlands, left in mid-September to pursue a position in a private IT company as a consultant. Jonathon Marks will be continuing to host this popular weekly show.

The United Nations Radio has been absent from shortwave for some decades and recently an agreement was signed between Merlin Communications and the United Nations, for the



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VK5CTY@VK5TTY or geencees@picknowl.com.au

# YLs doing things

## A Surprise Visit

Last month, just as four YLs (Jean VK5TSX, Meg VK5YG, Maria VK5BMT and Christine VK5CTY) were sitting down to lunch at "Berties", Dot VK2DB walked in to join them.

Dot has a family of boys so her grocery bills (and the accompanying "Fly Buy" point) mount up quite quickly. Dot uses these accumulated points to visit the other states. This time it was VK5. It was great to renew our friendship with her. We enjoyed the year Dot and her family spent in Adelaide and have missed her since she returned to Sydney.

## The Nets

The Monday nets have moved to the daylight saving time early because of the Olympic Games and atmospheric conditions have been variable. With the better overall propagation at this stage of the sunspot cycle, this year should be better than average.

The number of participants has been down but I am sure that will change as we adjust to the new times. However, discussion is as varied as ever though we still begin by looking at the weather all round Australia. It is fascinating to watch the seasons reverse each year.

The 222 Net has been very active, leading up to the YL2000 International Meet in Hamilton in October. More German YLs than usual have been active, along with the Italian and UK, and of course ZL and VK YLs. I suspect someone wanting some YL contacts could set them up via the 222 Net on Mondays on 14.222 call in starting at 0530 UTC.

I am pleased to tell you that after a health scare Dave ZL1AMN is recovering well and was active in the Lighthouse celebration at the end of August, hope you had a contact with him.

## A Blast From The Past

In a "CQ" for December 1954 there is an article about ham radio in God's service

with a mention of marriage ceremonies conducted on air etc., but of particular interest to YLs are the nuns who held amateur licences at that time.

Mention is made of four amateurs, Mother Lawrence W9CLE, Mother Reilly W9CLW, Sister Charlotte W7MUT and Sister Emiliana W1HUH. Sister Emiliana must be among the earliest holders of an amateur licence as she passed in 1933. The sisters set up several radio clubs for their students in the US and in South America and helped many budding amateurs to pass their exams.

This item from nearly 50 years ago was of particular interest to me as the first YL I sponsored into ALARA was Sister Barbara, a nun at the Convent of St Elizabeth in New Jersey with whom I had several years of interesting correspondence before she became a Silent Key. As a letter I received from the Convent telling me of her passing, said, Sister Barbara made many friends through amateur radio and thoroughly enjoyed all the time she could spare for it. It is a great hobby and one that spans all walks of life and all ages.

## We Do Things Outside Amateur Radio.

For the eighth or ninth year in a row Barbara VK3BJM has scooped the pool in the dressmaking section of the Royal Adelaide Show. This year she excelled herself with at least five First Prizes and three Second Prizes for the most beautiful underwear and night attire. The clothes would be a delight to wear - if you were brave enough to crush them by wearing them!

In previous years there have been more YL prizes at the RAH but Barbara is the most successful. How about some others of you entering the Royal Show competitions? Some of the craftwork on show in Perth and Brisbane would win prizes, I am sure. Let us give Barbara a run for her money next year.

Joy VK5YJ has a most interesting

activity — presenting the afternoon session each Wednesday. She has been doing this for five or more years and has many regular listeners. 5UV is a radio station set up originally by the University of Adelaide in the University grounds but several years ago it moved into the City. It now has a new location on North Terrace. Joy spends many hours planning her programs and uses much of her own very large and catholic collection of records.

Meg VK5YG reads for the vision impaired. This is different to the regular and useful daily paper reading that are now conducted in every State. Meg is part of a local program serving the people around her town of Murray Bridge. She scans the newspaper each week and picks out items that she thinks will appeal to her listeners to make up an hour's tape. She is part of a roster of local people who produce a tape each week, so each of them are rostered every couple of months. The tape is distributed by the lady who set up the scheme. An interesting variation on a theme and one that other people might like to copy.

## The ALARA Contest

Remember the ALARA Contest will be on again in early November. Now is the time to be getting your station ready for it.

Please do participate. Last year was very disappointing. Unless we do have an improved participation rate and an improved log completion, Contest may cease to be viable. If that happens we have only ourselves to blame.

OMs and Club stations are very welcome. This is an enjoyable contest. No one is so eager to just make contacts that they do not have time to chat.

You can use contacts made during the ALARA Contest towards the ALARA Award. It is a beautiful certificate, one you will be proud to hang on your wall. Why not make this year the year of the ALARA Award?

# The SKØUX club

(near Stockholm)

Henryk Kotowski SMØJHF

SKØUX

We have heard from a number of hams visiting Stockholm that it is difficult to find the most interesting club station in the area. In order to facilitate this and spread more information about our club station, let me present some facts.



SMØTTV and  
EAY-YL



SMØDRD  
(far) and  
SMØTOX



SMØCOL



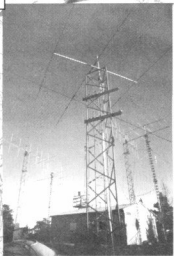
SMØKCO

The club called Kvarnbergen Amatorradioforening, was founded in 1993 and took over the callsign SKØUX and the present site from a local club of the Stockholm suburb of Täby. Since the a number of new towers and antennas have been accomplished. Through a unique agreement with a few other clubs, hundreds of their members have access to this place. The club itself has 35 members. They are interested in all aspects of amateur radio and willing to share their knowledge, experience and facilities with anyone attracted by our hobby. We welcome anyone visiting Stockholm for longer or short periods to join the club or just use the station. We have antenna covering almost the whole

spectrum allocated to amateur radio. There are 9 towers at the club, some of which carry impressive arrays. Still, there is space for more antennas, permanent or experimental.

Access is restricted so it is wise to contact the author by telephone (+46 707 561493), e-mail [smojhf@chello.se](mailto:smojhf@chello.se) or send a message through the club's reflector [skoux@sk7do.te.hik.se](mailto:skoux@sk7do.te.hik.se). The location is marked on the map just above Ullnasjön (Ullna lake) some 30 km north from the centre of Stockholm, along the E18 motorway.

These pictures show some of the antennas and some of our activities. Come and join us next time you happen to be in Stockholm, Sweden



## South East Radio Group Awarded Major Emergency Grant

The South East Radio Group VK5SR, based in Mount Gambier has received a \$5,000 grant under the South Australian Emergency Services Grant Program. Grant applications were invited from volunteer and emergency organizations, currently operating in South Australia without direct Government funding.

SERG members were recently in the news having successfully located a number of Emergency Locator Beacons (EIRPBs) operating on 121.5 MHz, activated in their area.

"A grant application was prepared for a project to construct a Mobile Radio Trailer for EIRPB tracking and for establishing emergency communications wherever required. Our

application was supported by recommendations from a number of government agencies and emergency services including the Local Council, the SA Police, the SES and CFS and our local politicians," said Kevin Johnston VK5KJ, President of SERG. "The grant will allow this group to purchase a pneumatic pump-up mast and 240v petrol generator mounted on a four wheel trailer. I only wish we had had the equipment for all the Y2K stations we activated at the beginning of the year," he said.

SERG members Kevin VK5KJ and Wayne VK5ZX received the

five thousand dollar Grant Cheque from Rt. Honorable Rory McKewen, Independent MP for Gordon.



## Adelaide Hills Amateur Radio Society

The last meeting of AHARS was a lecture by Graham VK5ZFZ in which he explained how to convert a computer power supply for use in the amateur shack. He talked about what to look for in the original power supply if you want to convert it. The first and most important point is that you must have a working power supply. There is no advantage in using something in which you must first find the fault. There are plenty of working computer power supplies available. The dead ones are

just that - dead - good only as boat anchors.

The topic of converting these power supplies is of such interest that we hope Graham will write it up for everyone to read. There have been several articles published in various magazines, one of which was in "Radio and Communications" for Nov and Dec 1998.

Next month members will be bringing along various projects they have made either recently or over the years. The

meeting will be in the form of a "Show and Tell" as each presenter talks about their project. This is the format used previously that has been very interesting. I am sure this year will be no exception.

If you are in Adelaide in the latter part of the month and would like to attend an AHARS meeting they are held at the Blackwood High School, Seymour Avenue Blackwood, starting at 7.30 on the third Thursday of the month.

## Redcliffe Radio Club Construction Competition

The Redcliffe and Districts Radio Club is holding a construction competition and those wishing to enter the first contest must have entries submitted no later than 2nd October and is open to all comers.

You do not have to be a member of the Redcliffe Radio Club to enter the competition.

**PRIZE is a \$20 GIFT VOUCHER (Dick Smith - Jaycar)**

The Competition will be held quarterly (every three months).

### Purpose:

To encourage experimentation,

homebrewing and construction within the hobby of Amateur Radio, Shortwave Listeners, CBers etc.

Antennas, kits or homemade entries of an electronic or radio communications theme only.

### Main guidelines are:-

Neatness in soldering kit or homebrew

### General appearance

Construction technique Operational

(whether it works or not)

### Rules:-

- Must be own work
- Technical assistance/trouble shooting is permitted

- Entries must be submitted by or on the first Monday of the judging month
- Judges' decision is final
- All entries must be shown at the next Club meeting following the judging.
- All entries must have been constructed from the year 2000 on
- Any entries from the Executive will be judged by the members.
- Entries to VK4YZ, VK4WX or VK4HRS for judging.

GOOD LUCK & HAVE FUN.

**Kevin VK4AKI**  
Media Officer



## The Bayside District Radio Club

Our members decided that for our supper after our June monthly meeting, we would have a "support Australia" theme. What better than Dick Smith? Nearly thirty members and visitors attended our meeting; and made short work of the supper. With the tables loaded with an assortment of Dick Smith biscuits, home made pikelets, Dick Smith jam and what we called BARS bubbles. These are made from rice bubbles, golden syrup and Dick Smith peanut paste. From all the comments I received the night was a great success.

Jim Grevett VK4WJG



Photos:

(Top) Pictured from left are:- Bob VK4XDO, Brian VK4VBL, Paddy VK4JPD (President), Ken VK4KF (club magazine editor) Vic VK4WST, Geoff VK4FK (Treasurer), Keith VK4TT and Bob VK4MCI



(Bottom) Detail of the Aussie feast

## AR Education Notes

Brenda M Edmonds, VK3KT.  
PO Box 445, BLACKBURN 3130.

## New Licence Conditions

The new Licence Conditions Determination has now been gazetted accepting the 5 words per minute Morse speed as the maximum required for full AOC privileges. This means that those holding an Intermediate level of Certificate, or Limited licence plus 5wpm, now have access to all the amateur bands, with full power rating.

At present there has been no change to the naming of the levels of qualifications, and the 10 wpm examinations will remain available for those who wish to achieve that qualification for reciprocal licence purposes or just to be able to say that they have passed that level. (Any incoming recruits with a background of competence in Morse code may well find the 10 wpm examination easier than

the 5 wpm.) There is also no plan to alter the allocation of call signs.

Regulations examination papers currently in use have been checked for their compliance to the modified regulations, and amended as appropriate, so new candidates should be aware of the bands and power limitations for both AOC and Intermediate licencees.

We have also been notified recently that the ACA has completed arrangements to establish reciprocal Amateur licensing arrangements between Australia and the European Conference of Postal and Telecommunications Administrations (CEPT). This allows for the recognition of Australian Amateur qualifications by

other CEPT participating countries, and removes the need to maintain existing agreements with many countries. It does not, however, remove the need for Australians travelling to other countries or visitors to Australia to obtain a licence before operating. Note, though, that there is no CEPT equivalent of NAOCP or NLAOC at present.

By the time this column is published, the IARU Region III Conference in Darwin will be completed. A number of matters for discussion relate to examinations and qualifications and the possible development of some system similar to the CEPT arrangements for the countries in Region III. Reports on the Region III Conference will be presented later in the year.

# PIC controlled transmitter

by Jeremy Lemke VK3TFH

One problem faced by any amateur who has a mast head pre-amplifier and a high transmitter power, is protecting the pre-amplifier from accidentally being transmitted into.

Direct switching of the pre-amplifier, power amplifier and transceiver might work sometimes, but a cough or a sneeze into the microphone at the time of pressing the PTT, can often mean disaster for the mast head pre-amplifier.

A sequencer eliminates this problem and there are many ways of accomplishing the correct switching sequence of the pre-amplifier, relays and transmitter.

A simple diode, resistor, capacitor LC circuit can be used, or a more complex TTL timer circuit will also do the job a little better.

In this article I have gone for the ultimate and produced a PIC controlled digital sequencer. It offers intelligent control of the pre-amplifier, antenna co-ax relays, high power amplifier and the exciter transceiver.

Optional feedback from the peripheral devices allows the controller the ability to further protect the pre-amplifier, by testing that the operation has been successful before advancing the sequence.

It also prolongs relay life by completing all relay operations before RF power is applied.

## Circuit Description

The sequencer uses the 16F84 PIC as a intelligent controller to correctly sequence the switching of a station mast

head pre-amplifier, antenna co-ax relays, high power transmitter amplifier and the exciter transceiver.

separates each switch operation.

The sequencer offers two time delays, 36ms between operations with link 5 open, and 18ms with the link in place.

These time intervals will be sufficient for most relays but if you have some very slow relays that you need to control, a longer time can be programmed into the PIC on request.

The controller has intelligent feedback sensing. Auxiliary contacts within each of the controlled station components, are connected to the controller giving feedback of the control operations success.

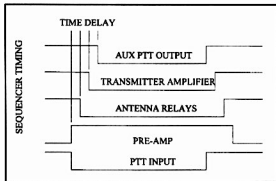
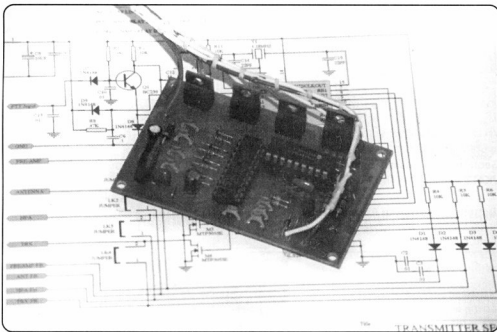


Figure 1

Fig 1 demonstrates the switching sequence of the apparatus under control, showing that the selected time interval

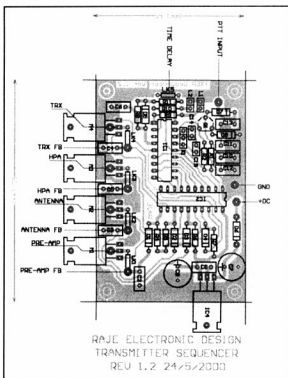


Figure 2

The controller will not increment the step, unless it has been proven that the device under control has responded.

This is a safety feature of this controller that will eliminate control mishaps and subsequent damage to the equipment.

If extended feedback is not required or available, the respective sense line can be linked to the power output device for that control leg.

This completes the intelligent feedback requirements of the PIC program by insuring that at least the output FET's have completed the switching operation.

Each power FET output switch has the ability to switch 8 amp at 60 volt if suitably mounted to a heat-sink.

The output sequence assumes that the pre-amplifier has a control relay arranged so that if power fails, the pre-amp will default to off and by-pass the antenna.

In receive mode M1 is switched on, M2, M3, M4 are off, the RX proven LED will light. In transmit mode M1 is off, M2, M3, M4 are sequentially switched on and the TX proven LED will light.

LED's L1 and L2 indicate when the TX or RX operations have successfully

completed and if any part of the sequence fails, neither the TX or RX proven light will light.

If a fault in the sequence is detected the system will remain in the receive state with the pre-amplifier deactivated.

Release of the PTT will re-establish normal receive condition.

Grounding the PTT will start the sequence. When the sequencer is controlling the exciter PTT, the PTT line needs to be exclusive to the sequencer.

If only the pre-amplifier, antenna co-ax relays and HPA are to be used, then the PTT input to the sequencer can be sampled from the exciter microphone PTT. Then the exciter control line is not used and its feed back sense line can be linked to allow the sequencer to achieve a proven state for that line.

A suggested circuit of the sequencer connection is included.

All inputs to the sequencer are active low. They are diode and buffer protected to safeguard operation of the controller.

## Assembly

The sequencer is constructed on a single sided PCB pre-drilled to fit the components.

Firstly fit all resistors, capacitors and diodes using the component overlay as a guide observing the polarity of the electrolytic capacitors and diodes.

Cut the excess component legs off and solder in place. Save the off-cut pieces for use as board links if required.

Next fit the 18 pin IC socket for the 16F84 PIC followed by the other IC's and transistors observing correct polarity, solder in place.

Make sure precautions for static handling are observed

The four power FET's M1 - M4 will need to be mounted to a heat-sink if high current switching is required

Heat-sink insulator mounting kits will be needed because the drain leg of the FET is also the heat-sink mount.

Depending on the required time delay, link 5 can be installed, 18ms link open, 36ms link closed. If the extended feedback sensing is not required, place links 1 - 4.

## Testing.

After all components are fitted, (less the 16F84 PIC), check the board for shorts or incorrect assembly.

Apply a voltage between +8 and +16 to the +DC input. Current draw should be minimal, around 45ma.

Measure the voltage at pin 1 of the 7805 regulator, pin 14 of the 16F84 socket and pin 20 of the 74LS244. All should read around +5 volt.

Disconnect power and fit the 16F84 observing the correct placement of pin 1.

As a temporary test setup, connect relays from 12 volt to each of the outputs. With the links 1-4 in place, apply power, the pre-amp relay should close and the green LED should light indicating correct receive condition.

Ground the PTT. The sequencer will sequentially step, opening the pre-amp relay and closing relays 2 to 4 in sequence.

On the completion of the TX sequence, the red LED will light indicating TX proven.

When the PTT line is opened, the relays will open sequentially 4 to 2, and relay 1 will close.

On completion of the sequence, the RX proven LED will light again.

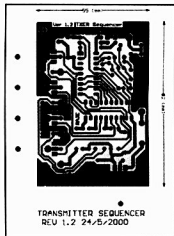


Figure 3

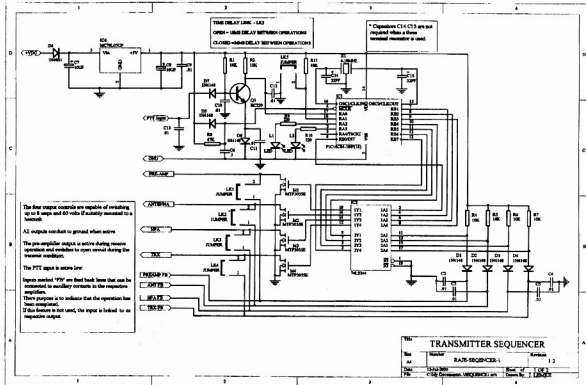


Figure 4

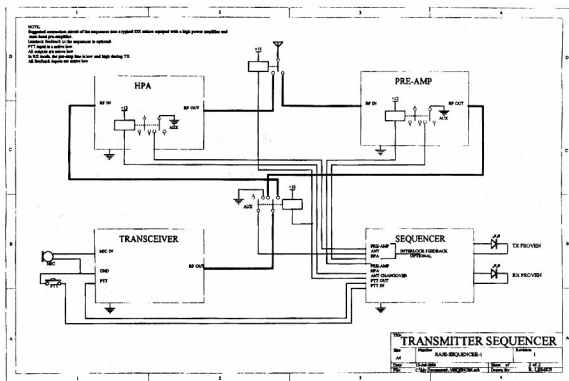


Figure 5

If during the sequence, if one of the functions fails to successfully switch, the sequencer will halt and return to receive condition.

The sequencer is now ready for wiring into the station control circuit.

It is good practice to mount any control apparatus operating in a High energy RF field, in a metallic enclosure with all input /output connections suitable bypassed. The sequencer does have on-board bypass capacitors to protect it against RF fields, and it has been tested operating with a 140 watt power amplifier. Still I recommend that for best operation, the sequencer should be enclosed in a shielded box and all cabling bypassed.

Printed circuit artwork and component overlay are supplied for those who wish to produce their own boards.

The 16F84 PIC can be purchased fully programmed from VK3TFH at a cost of \$25 including postage within Australia.

A full kit of parts including the 16F84 PIC is also available at a cost of \$60 plus \$5.80 pack and post.

These are available from

Jeremy Lemke VK3TFH

P.O. Box 101

Port Fairy, 3284

or EMAIL : [raje@ansonic.com.au](mailto:raje@ansonic.com.au)

or visit my web site at

<http://www.ansonic.com.au/raje/>

Comments or inquiries on the sequencer are welcome and I invite you to contact me by either snail mail or email.

ar

## Sequencer parts list

Designators	Comment
C10	.01
C11	.01
C12	.01
C13	.01
C14	See note 22PF
C15	See Note 22PF
C2	.01
C3	.01
C4	.01
C5	.01
C6	.1
C7	10uF
C8	10UF
C9	.01
D1	1N4148
D2	1N4148
D3	1N4148
D4	1N4148
D5	1N4148
D6	1N4001
D7	1N4148
D8	1N4148
IC1	PIC16C84-10/P(18)
IC2	74LS244
IC4	MC78L05CP
L1	LED
L2	LED
M1	MTP3055E
M2	MTP3055E
M3	MTP3055E
M4	MTP3055E
Q1	BC239
R1	10K
R10	220
R11	10K
R2	10k
R4	10K
R5	10K
R6	10K
R7	10K
R8	47K
R9	220
X1	4.18MHZ



Australian  
Communications  
Authority

## EMR Compliance Self-assessment Trial

The Australian Communications Authority (ACA) invites eligible radiocommunications licensees to take part in a trial of materials for self-assessing electromagnetic radiation (EMR) compliance.

The draft materials will allow licensees of some radiocommunications transmitters to self-assess compliance of their transmitter against the limits in the *Radiocommunications (Electromagnetic Radiation—Human Exposure) Standard 1999* (as amended from time to time).

Although the standard currently applies only to transmitter installations supporting cellular mobile telecommunications services, all radiocommunications transmitters will be subject to the standard by the end of 2001.

When the regulatory arrangements are fully in place, the ACA intends to allow some licensees to determine, for themselves, whether their installations comply with the standard. In anticipation of these changes, the ACA is making the self-assessment materials available

to licensees to trial on a voluntary basis.

The trial will assess the effectiveness and user-friendliness of the self-help guidelines by obtaining feedback from the licensees, which will enable the ACA to fine-tune the materials. The trial will also provide licensees with the opportunity to bring their installation into compliance before compliance becomes mandatory.

The self-assessment materials include charts and graphs that will allow trialing for the following radiocommunications services:

- Fixed Link
- Land Mobile Base Station
- Low Power TV and Radio Broadcast
- Paging
- Amateur Radio
- General Radio

The materials are designed to assist licensees to make a simple assessment of whether their transmitting facilities comply with the EMR standard.

The self-assessment materials are available for trial from 15 September 2000 to 15 January 2001. Licensees using the materials are required to return an evaluation questionnaire to the ACA. Participants may also be offered a free validation of their assessment through measurement by the ACA.

Licensees wishing to take part in the trial may obtain the materials via the ACA's website [www.aca.gov.au/standards/emr.htm](http://www.aca.gov.au/standards/emr.htm) or by contacting the ACA on telephone:

(02) 6256 5552.

## Giant LF Loopstick

A loopstick for reception of LF signals in the 70 to 340 kHz range was described in QEX Mar/April 2000 by Richard Q. Marris G2BZQ. This covers both the European LF band and the US lower band as well as the NZ allocation. A loopstick is used in broadcast radios and is much more compact than a loop. For LF a somewhat larger core is desirable and hence the giant LF loopstick.

To obtain superior sensitivity, selectivity and directivity a 12 inch 1.125 inch diameter ferrite rod was used. Such a rod is not a regular catalog item. The rod was made out of six 12 inch long 0.375 inch diameter rods cemented in a circle. F14 or equivalent ferrite rods were used. Even 12 inch rods are hard to find and

they were made by cementing shorter rods end to end with Super Glue or any similar cyanoacrylate adhesive. Locally 4 inch /100mm rods are available as well as rods 200 mm long. The rod ends should be cleaned and rubbed with fine abrasive paper to slightly roughen them prior to glueing. The fabrication of 12

inch rods is shown in Fig 2.

The 12 inch rods are then assembled into a bundle of six around a centre core as shown in Fig 3.. The centre core is a 12 inch long 0.375 inch diameter wood or plastic dowel. The assembly is held together for glueing with strong elastic bands. The rapid setting adhesive is then

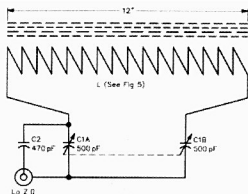


Fig 1. Giant Loopstick Schematic.

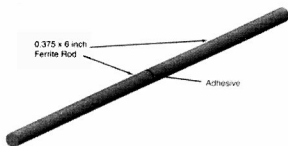


Fig 2. Fabrication of 12 inch Ferrite Rod from Two Shorter Rods.

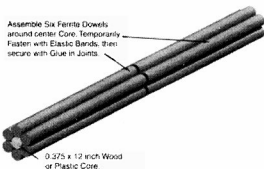


Fig 3. Fabrication of Giant Loopstick from Six 12 inch Ferrite Rods.

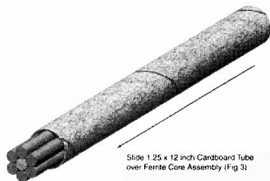


Fig 4. Cardboard Sleeve from box of kitchen wrap used as sleeve former for coil.

run into the valleys between the rods. Allow 24 hours for the glue to cure before cutting and removing the rubber bands. During the glueing process it is advisable to wear rubber gloves.

A 12 inch long 1.125 inch inside diameter thin wall cardboard tube is now required to be slid over the ferrite core as the coil former. Have a look at the tubes used in rolls of kitchen films or even a mailing tube. The tube is shown in Fig 4 and the coil is shown in Fig 5. The coil is an 11 inch long closewound winding of 24 AWG centered on the core.

The circuit of the giant loopstick is shown in Fig 1. The tuning capacitor is a twin gang 500 pF per section originally used in a broadcast radio. Capacitor C2 is a 470 pF silver mica capacitor which is used to match the loopstick to the 50 ohm output to the receiver.

The loopstick was mounted on a

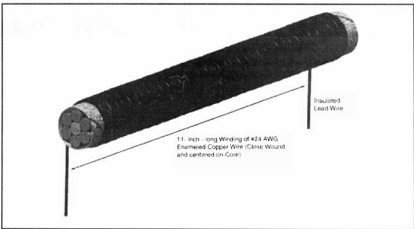


Fig 5. Coil Winding .

wooden base with the tuning and matching circuit mounted in a plastic box attached to the wooden base. The tuning range obtained was from 70 to

340 kHz. Slight differences can be expected due to component differences but should not cause significant problems.

# Giovannini D2T Antenna

An interesting wideband antenna was reviewed in CQ June 2000 by L. B. Cebik W4RNL. The antenna is the Giovannini D2T which offers a low SWR below 2:1 over a wide frequency range from the region of 160 metres through the two metre band. It uses a non inductive resistor to provide a termination and is one of an antenna class which includes the T2FD design marketed by B & W. Similar antenna types are used for a variety of commercial and military uses where wide coverage together with an acceptably low SWR are important considerations.

The antenna looks a bit like a ZL Special as it consists of two elements joined by a crossed transmission line. The elements are folded dipoles with an 820 ohm termination at the centre of one and a matching transformer at the centre of the other. The antenna is shown in Fig 6, together with the T2FD design marketed by B&W. Both use a termination and a matching transformer. The matching transformer is a wideband design which matches the 50 ohm feed to the antenna 800 ohms.

The Giovannini D2T is made out of wire of approximately 14 AWG. The boom is aluminium and the elements are supported by fibreglass spreaders. The termination resistor which must dissipate a significant amount of power is mounted in a fibreglass tube as weather protection.

At lower HF frequencies the gain decreases below 10 MHz. However gain is probably the wrong word as the antenna is small at these frequencies and losses are considerable. However it does radiate and if the signal is sufficient and the SWR does not upset the radio this may be acceptable.

Above 10 MHz the antenna efficiency improves and at higher HF frequencies some directivity is evident for the 12 and 10 metre bands.

While the antenna provides SWR performance into the VHF region it may not be an antenna of first choice for 6 or 2 metre band operation. At the upper

end the pattern exhibits a number of lobes.

The antenna is made by Giovanni Elettromeccanica, Via Enrico Mattei 9, 50039 Vicchio (Florence) Italy. Giovanni's website is <<http://www.antenna.it>>. The price in the USA is in the US \$ 500 to \$ 600 region.

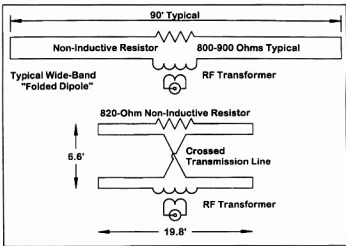


Fig 6.T2FD and Giovannini D2T Antennas.

# SSB is older than you are!

Steve VK5AIM

If most Amateurs today were told that SSB is older than they are, they would deny it.

Way back in 1914 John R Carson, employed by the American Telegraph and Telephone Company, was asked to study the problems of Telephony over long distances.

In his study Mr Carson came to conclusions that were highly debatable in those days. Like many brilliant ideas they were much discussed and debated at the time. His conclusions were this: of the total power transmitted, the greatest amount of that power is in the carrier, which transmits no useful information. The other components of the transmitted power are two "voicebands" or sidebands, as we now know them, which carry identical information.

Outside the telegraph companies no one in the radio field took much notice of Mr Carson's conclusions. The ideas on modulation of a radio wave were vague. The existence of these of "sidebands" was hard to grasp. Others believed that a carrier was a must! The fact that modulated oscillators were the principal method of RF power generation in those days led to the confusion.

Since the Atlantic had not yet been

spanned by voice, the distance was formidable. The power required to cross the distance seemed incredible. Every watt of power was needed in the carrier!

Mr Carson pointed out that by eliminating the carrier component the RF power required could be halved. He devised a "balancing out modulator" to remove the carrier. Amateurs brought up on valves will recognise the "Balanced Modulator". See Fig 1.

Mr Carson showed that with the same main source of power, by eliminating the carrier the RF input to the transmitters could be doubled. This doubling of power could be achieved without losing any intelligence. He showed that it was not possible to tell that the carrier was removed. To do this it required a little more work at the receiver end. A different "demodulator" or detector was required. Mr Carson did this by having the receiver supply the missing carrier, the BFO in the modern SSB receiver. He pointed out that the amount of power required at the receiver was minute in comparison to that of the transmitter.

He had just "Passed the Buck" by supplying the carrier from the transmitter to the receiver. See Fig 2. A

fifty percent power saving was real.

Mr Carson noted the two sidebands, both with the same info on each. Why not get rid of one and save more power. Removing one would not destroy any of the info transmitted. More power saved. So he set about a system to remove one of these sidebands. This was done with a filtering system at the transmitter. Remember this was all done at VLF or long waves, frequencies at which LC filters were manageable.

Now he had eliminated twenty five percent of the power required by removing one of the sidebands, add this to the fifty percent previously removed with the removal of the carrier and you had saved a whopping seventy five percent of the power required. Only one quarter of the power is required. "Ah!" They said, "The signal will be so weak no one will hear it!" "Wait a minute," said Mr Carson you had all that input power in the first place, use all of that now to generate this SSSC Single Sideband Surprised Carrier signal.

While at 100 Watts of RF the reduction was not as significant, multiply it by ten or one hundred to Kilowatts and the saving is significant.

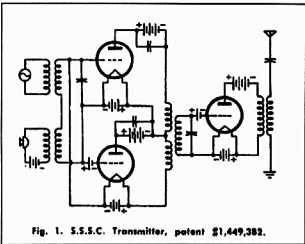


Fig. 1. S.S.S.C. Transmitter, patent \$1,449,382.

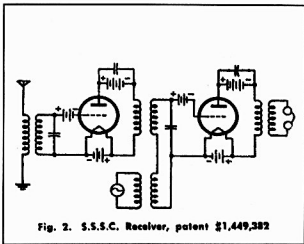


Fig. 2. S.S.S.C. Receiver, patent \$1,449,382



The savings didn't stop there, said Mr Carson. By removing one of the sidebands you narrowed the bandwidth required by the transmitter. This was a bit hard to grasp in those days, as bandwidth with modulation was not all that clear. He also pointed out that bandwidth of the receiver, thus the selectivity, could be improved; this would also remove some of the noise.

Mr Carson was thinking away a head of his time when we consider that Spark transmitters were still in use and Valve transmitters were mostly Modulated

Oscillators.

By December 1, 1915 Mr Carson had a system working well enough to apply for a patent in the USA. Figs 1, and 2. Shown his CCT's.

Unfortunately World War 1 got in the way and Mr Carson's patent, modestly called "Method and Means for Signalling with High Frequency Waves", was not granted until April 27 1927, Patent No. 1,449,382.

This invention has proved of inestimable value since that time, both

in Telephone and Radio Telephone transitions.

As Amateurs know, the power required for our modern HF SSB transceivers has allowed the development of the likes of the TS-50, IC-706, and FT-100. What would Mr John Carson think and say if he could see one of these and many others of these transceivers today?

*Sourced from a copy of CQ  
December 1955.*

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# Aerial Circuit for 12' Whip

**Robert Milne VK7ZAL-AX2TAR**  
11 Clifford Street,  
Moonah Tas 7009

This is a circuit that I have developed, which I use in conjunction with a 12 foot long ex tank whip.

Because the man made noise is very high at my QTH I have to move to a quiet area to listen to low frequency signals, from New Zealand.

I travel about two thirds of the way up Mt Wellington to a quiet spot.

The only answer that I have found for the high man made noise is to move away from it.

All the fets are MPF102's  
Q1 has a 10kohm source resistor. This high negative feedback stops broadcast stations from going through the amplifier in conjunction with L1 and C1.

L1 and C1 are tuned to the frequency of the desired signal.

When I get to my listening place, I mount the whip aerial up next to the roof

of my car. I have heard most of the New Zealand LF operating hams on this setup.

The New Zealand hams usually transmit on 181.4 kHz.

This aerial system which is very portable allowing it to be set up in a quiet LF location.

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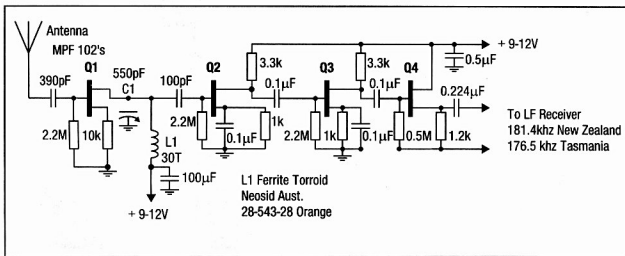


Figure 1

# ▶ YAESU'S DONE IT AGAIN



## FT-920 HF/6m Transceiver with DSP

Now there's no excuse for not taking advantage of the advances in Digital Signal Processing, transceiver design plus the fun of 6m operation. The stunning Yaesu FT-920 is a high performance HF/6m multi-mode base station transceiver that provides 100W PEP output on the 160-6m bands, incredible front-end performance based on the FT-1000MP design, and a huge array of features that make it a pleasure to use.

At first glance Yaesu's renowned Omni-Glow LCD screen is obvious, and its wide-angle view provides a wealth of information about the transceiver's operating status with multi-function metering, dual frequency displays and an Enhanced Tuning scale for DSP bandwidth, CW tuning, FM discriminator and more. Inside, the FT-920 is built around a rugged diecast unibody chassis which provides excellent heatsinking for the low distortion dual MRF255 160-6m FET power amplifier.

For more comfortable operating when weaker signals are present Yaesu's engineers dedicated themselves to enhancement of real-world signal to noise ratios, and after thousands of hours of design and testing have produced an industry-leading 33.3MIPS (millions of instructions per second) processing speed DSP in the FT-920 that provides a two-parameter noise reduction system with 32 steps of front panel adjustment. This amazing system also provides dual control DSP passband tuning, DSP auto-notch filter, an amazing new transmit Digital Speech Processor, DSP mic equalisation, fast acting DSP VOX circuitry as well as a Contest-ready Digital Voice Recorder!

Other features include an all-band (160-6m) auto antenna tuner which also provides greater receiver band-pass protection, Direct Digital Synthesis for clean local oscillators, selectable frequency-optimised receiver front-end pre-amps, and a Shuttle Jog tuning ring for fast QSY.

A Dual Watch receive system allows you to check for band openings, especially handy when monitoring 6m. Also provided are SSB/CW operation (AM and FM optional), 127 memories with alphanumeric labelling, IF Shift and IF noise blanker to fight interference, plus an extensive menu system for selecting most "set and forget" functions. The FT-920 is supplied with an MH-31B8 hand mic, DC power lead and comprehensive instruction manual.  
D 3420

Why not call for a copy of  
the Yaesu 6 page FT-920 colour brochure  
to learn more about this efficient transceiver  
that's without peer in its price class.

**2 YEAR WARRANTY**

**YAESU**

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# DON'T MISS THE ACTION!

## VX-IR 2m/70cm Micro Handheld

One of the worlds smallest dualband handhelds, just 47 x 81 x 25mm (WHD) including a high capacity 700mA/h Lithium-ion battery! The VX-IR covers both 2m and 70cm amateur bands, plus offers AM/FM and TV sound reception, 2 hour fast charging as standard, simple settings and a large LCD screen.

### Features:

- Tx: 144-148, 430-450MHz.
- Rx: 0.5-1.7MHz, 76-300MHz, 300-580MHz, 580-999MHz (cellular locked out).
- Output: 2m/70cm 0.5W (at 3.6V), 1.0W with external DC.
- 291 memories, most with alpha naming.
- AM, FM (n), and FM (w) reception modes.
- CTCSS encode/decode.
- 31 smart search memories.
- Tone search for CTCSS and DCS.
- Includes FNB-52LI 3.6V 700mA/h Lithium-ion battery, regulated AC adaptor/charger, antenna and belt-clip.

D 3665

**2 YEAR WARRANTY**

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## PRICE BREAKTHROUGH!

## Yaesu FT-90R 2m/70cm micro mobile

Another engineering breakthrough from Yaesu – a tiny dual band mobile rig with high power output, a remoteable front panel, and a rugged receiver front-end. The FT-90R provides 50W RF output on the 2m band as well as 35W output on the 70cm band, a solid die-cast casing with microprocessor controlled cooling fan for reliable operation, and a large back-lit LCD screen, all in a package measuring just 100mm x 30mm x 138mm.

### Also includes:

- Wide dynamic range receiver for greatly reduced pager breakthrough.
- Huge receiver coverage – 100-230, 300-530, 810-999.975MHz (Cellular blocked).
- 180 memories and a variety of scanning functions.
- Built-in CTCSS encode/decode, battery voltage metering.
- Designed for 1200 and 9600 baud packet operation.
- Tiny remoteable front panel (requires optional YSK-90 separation kit)
- Includes MH-42 hand mic, DC power lead, and easy to follow instructions.

D 3312

## YSK-90 Front Panel Separation Kit

D 3317

**\$129<sup>95</sup>**

**\$749**  
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**SAVE \$100**

**2 YEAR WARRANTY**



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1536 DPS/cof.



# Division Directory

The Amateur Radio Service exists for the purpose of self training, intercommunication and technical investigation. It is carried out by amateurs who are duly authorised people interested in radio technique solely with a personal aim and without pecuniary interest.

The Wireless Institute of Australia represents the interests of all radio amateurs throughout Australia. National representation is handled by the executive office under council direction. One councillor for each of the seven Divisions. This directory lists all the Divisional offices, broadcasts schedules and subscription rates. All enquiries should be directed to your local Division.

## Broadcast schedules All frequencies MHz. All times are local.

**VK1 Division Australian Capital Territory.**  
GPO Box 600, Canberra ACT 2601  
President: Gilbert Hughes  
Secretary: Peter Koppenburg  
Treasurer: Ernie Hosking

VK1GH  
VK1CPK  
VK1LK

**VK2 Division New South Wales**  
109 Wigram St. Parramatta NSW  
(PO Box 1066, Parramatta 2124)  
(Office hours Mon-Fri 1100-1400)  
Phone 02 9689 2417  
Web: <http://www.ozemail.com.au/~vk2w/>  
Freecall 1800 817 644  
e-mail: [vk2w@ozemail.com.au](mailto:vk2w@ozemail.com.au)  
Fax 02 9633 1525

President: Michael Corbin  
Secretary: Barry White  
Treasurer: Pat Leeper

VK2YC  
VK2AAB  
VK2JPA

**VK3 Division Victoria**  
40G Victory Boulevard Ashburton VIC 3147  
(Office hours Tue & Thur 0930-1500)  
Phone 03 9885 9261  
Web: <http://www.vsa.com.au/~waviw/>  
Fax 03 9885 9298  
e-mail: [waviw@alphalink.com.au](mailto:waviw@alphalink.com.au)  
President: Jim Linton  
CEO: Barry Wilton  
Secretary: Peter Mill

VK3PC  
VK3XV  
VK3APO

**VK4 Division Queensland**  
GPO Box 638 Brisbane QLD 4001  
Phone 07 3221 9377  
e-mail: [office@wisaq.powersup.com.au](mailto:office@wisaq.powersup.com.au)  
Fax 07 3266 4929  
Web: <http://www.wia.org.au/vk4/>  
President: Colin Gladstone  
Secretary: David Jones  
Treasurer: Bill McDermott  
Office Mgr: John Stevens

VK4ACG  
VK4OF  
VK4AZM  
VK4AFS

**VK5 Division South Australia and Northern Territory**  
(GPO Box 1234 Adelaide SA 5001)  
Phone 08 8294 2992  
web: <http://www.sant.wia.org.au>  
President: Jim McLachlan  
Secretary: David Minchin  
Treasurer: John Butler

VK5NB  
VK5KK  
VK5NX

**VK6 Division Western Australia**  
PO Box 10 West Perth WA 6872  
Phone 08 9351 8873  
Web: <http://www.omen.net.au/~vk6w/>  
e-mail: [vk6w@omen.net.au](mailto:vk6w@omen.net.au)  
President: Neil Penfold  
Secretary: Christine Bastin  
Treasurer: Bruce Hedland-Thomas

VK6NE  
VK6ZLZ  
VK6OO

**VK7 Division Tasmania**  
PO Box 371 Hobart TAS 7001  
Phone 03 6233 3709 (BH)  
Web: <http://www.tasnet.edu.au/tasoline/vk7w/>  
also through <http://www.wia.org.au/vk7>  
email: [batesw@netspace.net.au](mailto:batesw@netspace.net.au)  
Fax 03 6223 7816

President: Phil Corby  
Secretary: John Bates  
Treasurer: John Bates

VK7ZAX  
VK7RT  
VK7RT

**VK1Wt:** 3.590 LSB, 146.950 FM each Sunday evening from 8.00pm local time. The broadcast text is available on packet, on Internet [aus.radio.amateur.misc](mailto:aus.radio.amateur.misc) news group, and on the VK1 Home Page <http://www.vk1.wia.ampr.org>

**Annual Membership Fees.** Full \$77.00 Pensioner or student \$63.00. Without Amateur Radio \$49.00

From VK2Wt 1.845, 3.595, 7.146\*, 10.125, 14.160, 24.950, 28.320, 29.120, 52.120, 52.525, 144.150, 147.000, 438.525, 1281.750 (\* morning only) with relays to some of 18.120, 21.170, 584.750 ATV sound. Many country regions relay on 2 m or 70 cm repeaters. Sunday at 1000 and 1930. Highlights included in VK2AWX Newcastle news, Monday 1930 on 3.593 plus 10 m, 2 m, 70 cm, 23 cm. The broadcast text is available on the Internet newsgroup [aus.radio.amateur.misc](mailto:aus.radio.amateur.misc), and on packet radio.

**Annual Membership Fees.** Full \$78.00 Pensioner or student \$61.00. Without Amateur Radio \$47.00

**VK3BWt** broadcasts on the 1st and 3rd Sunday of the month at 8.00pm. Primary frequencies, 3.615 LSB, 7.085 LSB, and FM(R)s VK3RML 146.700, VK3RMM 147.250, VK3RWG 147.225, and 70 cm FM(R)s VK3ROU 438.225, and VK3RUM 438.075. Major news under call VK3ZVU on Victorian packet BBS and WIA VIC Web Site.

**Annual Membership Fees.** Full \$78.00 Pensioner or student \$61.00. Without Amateur Radio \$47.00

**VK4Wt** broadcasts on 1.825 MHz SSB, 3.605 MHz SSB, 7.118 MHz SSB, 10.135 MHz SSB, 14.342 MHz SSB, 21.175 MHz SSB, 28.400 MHz SSB, 29.660 MHz FM (pttr), 147.000 MHz, and 438.525 MHz (in the Brisbane region, and on regional VHF/UHF repeaters) at 0900 hrs K every Sunday morning. QNEWS is repeated Monday evenings, at 19.30 hrs K, on 3.605 MHz SSB and 147.000 MHz FM. On Sunday evenings, at 18.45 hrs K on 3.605 SSB and 147.000 FM, a repeat of the previous week's edition of QNEWS is broadcast. Broadcast news in text form on packet is available under WIAQ@VKNET. QNEWS Text and real audio files available from the web site

**Annual Membership Fees.** Full \$85.00 Pensioner or student \$72.00. Without Amateur Radio \$56.00

**VK5Wt:** 1827 kHz AM, 3.550 MHz LSB, 7.095 AM, 14.175 USB, 28.470 USB, 53.100 FM, 147.000 FM Adelaide, 146.700 FM Mid North, 146.900 FM Mildura, 146.825 FM Barossa Valley, 146.900 FM South East, 146.925 FM Central North, 147.825 FM Gawler, 438.425 FM Barossa Valley, 438.475 FM Adelaide North, ATV Ch 35 579.250 Adelaide. (NT) 3.555 USB, 7.065 USB, 10.125 USB, 146.700 FM, 0900 hrs Sunday. 3.585 MHz and 146.675 MHz FM Adelaide, 1930 hrs Monday.

**Annual Membership Fees.** Full \$77.00 Pensioner or student \$63.00. Without Amateur Radio \$49.00

**VK6Wt:** 146.700 FM(R) Perth at 0930hrs Sunday relayed on 1.865, 3.564, 7.075, 10.125, 14.116, 14.175, 21.165, 29.120 FM, 50.150 and 438.525 MHz, Country relays 3.562, 147.200 (R) Catalpa, 147.350 (R) Bussellton, 146.900 (R) Mt William (Bunbury), 147.000 (R) Kalbarning and 147.250 (R) Mt Saddleback. Broadcast repeated on 146.700 at 1900 hrs Sunday relayed on 1.865, 3.564 and 438.525 MHz : country relays on 146.900, 147.000, 147.250 and 147.350 MHz. Also in "Real Audio" format from the VK6 WIA website

**Annual Membership Fees.** Full \$69.00 Pensioner or student \$59.00. Without Amateur Radio \$38.00

**VK7Wt:** 146.700 MHz FM (VK7RHT) at 0930 hrs Sunday relayed on 147.000 (VK7RAA), 146.725 (VK7RNE), 146.625 (VK7RMD), 3.570, 7.090, 14.130, 52.100, 144.150 (Hobart), repeated Tues 3.590 at 1930 hrs.

**Annual Membership Fees.** Full \$88.00 Pensioner or student \$75.00. Without Amateur Radio \$55.00

VK8 Northern Territory (part of the VK5 Division and relays broadcasts from VK5 as shown, received on 14 or 28 MHz).

## VK1 Notes

### Forward Bias

Peter Kloppenburg VK1CPK

It appears that the movie "Frequency" definitely attracts people with a general interest in radio and electronics. Peter Ellis (VK1KEP), our Publicity Officer, together with several other amateurs set up a stand with radio gear in the foyers of suburban Canberra theatres over the opening weekend (7-10 August) and proved that, indeed, 'people are funny'. Peter said 'For me, it ranged from the drunk teenager who had a long and very sensible conversation with me about electronics, through the chap who collects old electronic bits and intends to get an amateur licence "one day", the

many who looked at my rig and posters, to a teenage girl who thought it cool to take a leaflet then drop it in front of me'. Peter found that the managers were universally understanding and helpful. 'Yet I could also sense that the young theatre staff couldn't understand why someone would be there for no pay and what they might think is little result'. He added 'Try this for an exercise in restraint; I found it curious that staff were using "two-ways" throughout the theatre yet had questioned my dual-band HT!'

By the time you read this, the new

Regulations Course has just started on 5 October and goes on for four weeks. The exam is set for 2 November 2000. The Regulations Course is an add-on to the Novice course that finished recently with an exam on August 30. Eleven candidates sat for it, and the pass rate was 72 %. These results are a good incentive for the Division to continue with the Novice course next year. The next General Meeting is on October 23, 2000. See you in Room 1, Griffin Center, Civic, Canberra City.

Cheers to all.  
pkloppen@dynamite.com.au

## VK4 Notes — Qnews

### 70 Years On

On Wednesday August 16 Commercial Radio station 4BC celebrated its 70th Birthday with a reunion of mammoth proportion.

Back then 4BC on its first night on air invited the Radio Amateurs of Brisbane to a special "do" as it was the end of an era for the Hams. From that point in time the hams of Brisbane were not allowed access to what is now known as the MF broadcast band. Up until the birth of the "Big BC" many a ham was on the band playing "DJ" complete with musical programs.

Oh and the 70th Anniversary bash... from what Graham VK4BB can remember, he had a great time. Hi!

### VK4 Area EME

Trevor VK4AFL recently attended a meeting of International Moon Bounce operators in Rio de Janeiro. VK4AFL is probably the only "active" EME operator in this part of the world, and has regular 70cm EME contacts with his Northern Hemisphere counterparts via his excellent home brew antenna system.

### Sunshine Coast Club Rescue

Recently on Qnews mention was made of the Lighthouse activation weekend by the club.

While returning from the Lighthouse the members of Sunshine Coast AR Club came across a 'wave trap'. In fact a very wet young couple, honeymooners from Sydney hit the drink right in front of the Sunshine Coast vehicles. While driving along the beach, trying to beat the incoming tide, their van hit a deep water-filled trap

Sunshine Coast members had to pull the couple out through the windows as the water rose because the central locking locked all the doors as soon as the salt water hit the electronics!

As Len VK4ALF said "all a big panic but we can all smile about it later, the full story and pics on the club web page". <http://www.ozemail.com.au/~vk4len/scarc/lighthouse.html>

### VK4GKM BBS

As you heard in a recent QNEWS, Graeme VK4RD had decided to close

down his VK4GKM BBS at Biloela at the end of the month. However there is good news and it goes to show that lots of people listen to QNEWS without being known. After the report of the closure, several packet operators (or prospective packet operators) came out of the woodwork and pleaded with Graeme to keep the BBS going.

So the good news is that, due to the sudden escalation of user support Graeme has decided to keep the VK4GKM BBS at Biloela open. Thanks for deciding to keep a vital link open Graeme... we do hope though that you still get some time aside to see the family and keep up the research for the book!

### VHF-DX

Due to massive temperature inversions across the north, the VHF skip has been tremendous, includes seeing the Clermont digi direct into Townsville. P29 stations accessing into the packet system in Cairns. Contacts have also been direct into Townsville on 2 metres and 70 cm by John VK4JL to P29PL and P29KFS.

## National Teletext Upgraded

Gary VK3KKJ operating VK3ZWI has been busy bringing the Victorian pages of the VK/ZL/P2 linked teletext system up to date and devising many new pages. Gary has also designed a much quicker way of indexing the divisional pages; an idea, which comes into it's own for TT users who have to 'digi-peat'.

Check out the new index, teletext page 108, also the WIA Victorian section, currently indexed on page 803, VK2 on 802, VK7 on 807 etc etc.

Bill VK5IE has just issued a reminder to the South Australian Packet Users Group [SAPUG] about the wealth of material on the VK/ZL/P29 linked TeleText system. TeleText has a host of information, which will be useful to all stations at some time or another. If your BBS or a BBS which you can digipeat to DOES NOT RUN TELETEXT don't despair, send a personal (sp) message to

VK4WIE and request the page numbers you want.

The index pages are: -  
101 BBS commands  
102 Experimenters U-Build it.  
103 NZART (ZL)  
104 PNGARS (P29)  
105 VK Packet services  
106 Club information VK3/5/6/7/8  
107 WIA Federal information  
108 WIA Divisional information  
109 Club information VK1/2/4 and Special Interest Groups  
110 Index for YOUR local BBS.  
(This is the index for items pertaining to area served by your BBS and is NOT posted on the linked system)  
599 Shows all stations, a good way to find your closest TT BBS.  
999 Shows this months new pages into linked system

If you have a bright ideas or hints and tips and would like them included in the local pages or general pages, please send them by packet to the following stations VK4BB @ VK4WIE or VK3 users

to VK3ZWI @ VK3FRS, VK5 users to VK5IE @ VK5SPG and ZL users to ZL2TZE @ ZL2TZE.

Although coordinated by Graham VK4BB, TT is an International service, serving all VK Call areas P29 and ZL. If you'd like TT on YOUR BBS, ask your sysop to contact VK4BB @ VK4WIE to request the free software. (Also available in Linux).

## WIAQ Meeting

25th November in Rockhampton.

The WIAQ Council proposes to meet in Rockhampton Saturday 25th November joining the RADAR CLUB for its Annual Dinner. The meal will cost \$16 for three courses with private room and bar. The venue will be the New Rockhampton Leagues Club.

Clive VK4ACC can arrange accommodation at the DAVID MOTEL, if we book now we will ensure our accommodation. (Clive Sait VK4ACC clive.sait @ ergon.com.au) Ph 4931 2244

## VK3 Notes

By Jim Linton VK3PC

### Special message to members

As previously advised, the WIA Victoria Council took the step on 1 July, 2000, to return to entirely voluntary labour to provide membership services and other activities.

This necessary and responsible policy decision was taken after duly considering the future financial performance of WIA Victoria in a climate of increasing costs and falling membership and amateur licensee levels.

The Council stressed that the success of this change depended on the membership providing adequate suitable voluntary labour. Insufficient volunteers have come forward since the return to voluntary labour was announced earlier this year.

We need ten volunteers immediately to get actively involved in our organisation. This figure represents less than one per cent of the total membership.

- As an absolute minimum, the following vacancies exist:
- WIA Victoria Office - 3 (a regular one day a week)
  - VK3BWI broadcast - 2 (writer/editor/producer - one broadcast a month each)
  - Council - 3 (a company director position with associated duties and responsibilities)
  - Education - 2 (novice theory and novice Morse code instructor)
  - Without these additional volunteers (except for education), it is highly unlikely that the office can remain open, the VK3BWI broadcast will continue, and the workload level on council can be sustained.

It is your organisation, it needs your support.

## VK7 Notes —QRM

First-up - congratulations to our Federal President, Peter Naish, on his elevation to the Region 3 executive. Peter, you ARE a tiger for punishment but we know that you will be an asset to that body and will represent us mere members really well.

It was disappointing to our north-west branch members that we had only two applications for the "over the Strait" award this year - one each way, northwards and southward. Hopefully, if we run it again next year, it will attract more interest.

Our branches are working hard on membership recruitment. The southern branch had a busy time with their display at the screening of the film, "Frequency". A lot of promotional material was distributed with 45(+) requests for membership application forms. We have our fingers crossed that some will convert to members. The northwest branch welcomed two new members at the September meeting, Shirley Hardstaff, (XYL of Max, VK7KY), who has just achieved her novice licence, and John Webster, VK7KDR.

Southern members are gearing up for their communications job in this year's "Southern Safari". The terrain these vehicles travel over (flat country is rare!!) really tests the expertise of our members. Portable repeaters are a must but each year these fellows seem to get better at it.

6metres is having a good resurgence in our northern (Launceston) area. Joe, VK7JG has reprocessed a lot of RT85 rigs and members are getting on air for the first time

Cheers for now,  
Ron Churcher, VK7RN

**Ross Christie, VK3WAC**  
19 Browns Road, Montrose 3765, Vic.  
Email [Vk3wac@aol.com](mailto:Vk3wac@aol.com)

## When signals are not heard

I received a letter recently (I will keep the name and call confidential) from a relatively new amateur who complained that although he spends many hours each day listening on the bands he rarely hears any of the DX stations listed in 'DX Notes'. Now, the tone of his letter was not accusing or humorous but I do think he was serious. He states in his letter that he understands that propagation conditions from many parts of the world do not always favour Australia every day, but is adamant that surely some of the DX stations should be audible here if they are on the air operating. I can only point out that propagation, although important if signals are to be heard at all, is not the only influence on whether a particular station can be heard.

The DX station in question may only operate restricted hours, the hours he does operate may not be when most VKs are awake, his antennas may not favour the VK direction, he may be running barefoot with 100 watt to simple antennas, his antennas may not be performing well, he may not be targeting VK at all.

The DX station may not be heard for many reasons. There could also be problems at the receiving end. How good is your antenna system? Can it be steered to receive signals from one direction and reject signal from all other directions? Is your local noise level conducive to hearing the 'really weak ones'? One problem I have personally encountered is trying to establish the ID of a weak station underneath a dogpile. If a dogpile is running then there is probably a rare one underneath, all you have to do is find out whom, and if you need him, try and make him hear you! Some serious concentration and patience can sometimes pay off here, but at other times it can be so frustrating that it is best to give up rather than persist, especially when conditions are marginal.

My best advice is to try to identify the country/station of interest and gauge when propagation between VK and the station is likely to be optimum; this should prove to be the best time to successfully establish a QSO. But, remember, the best propagation times will not always, if ever, coincide with the times a DX station is likely to be on the air. Most amateurs have jobs, family commitments and other interests and may not be on the air every day. This also applies to temporary DX stations, e.g. hams holidaying in exotic locales who may have more than amateur radio on their minds, or those amateurs on extended working contracts in DX locations. Listening, patience and persistence and understanding are what it takes to succeed in DXing. As for the accuracy of the information published in 'DX Notes', the information is gleaned from some of the most reliable sources of DX news there is and is more often than not supplied by those engaged in or involved in DX operations. If they are wrong or misleading, then 'DX Notes' will be wrong too. But why would anyone deliberately misinform or mislead us on DX operations?

I have been very busy at work these past weeks and have had little opportunity to switch the rig on let alone work some DX. Perhaps you have fared better than I in this respect. October should have some interesting stations on air for those of us with the time and patience to have a listen.

### The DX

**4W EAST TIMOR.** Dennis, K7BV and Wolf, N6FF, are mounting a DXpedition to East Timor. The DXpedition will use the call 4W6DX, the call of the East Timor Amateur Radio Association. The anticipated dates for the operation is from the 6<sup>th</sup> to the 17<sup>th</sup> of October. During

daylight hours, the pair will be on the bands above 40 metres, during the hours of darkness they will be found on 30, 40, 80 and 160 metres. Some operation might take place using 4W/K7BV (QSL via KU9C) and 4W/N6FF (QSL via N6FF). Rod, WC7N will be the pilot station and can be contacted via email at [wc7n@wave.net](mailto:wc7n@wave.net) if information or a sched is required. A website with information on operating plans and frequencies is available at <http://www.qth.com/k7bv/timor/> [TNX K7BV and 425 DX News].

**5B4 CYPRUS.** Look for Dez, 5B4/GODEZ, to be active until 2003. He seems to like 17 metres CW/SSB. Check between 1830 and 0300z (sometimes as early as 1430z). He is hoping to obtain a 5B4 and ZC4 callsign. QSL via GODEZ. [TNX OPDX]

**5V DJ7UC, DL4WK, DL7BO, DL7DF** and **DL7UFR** are travelling to Togo and will be on the air from the 3<sup>rd</sup> to the 9<sup>th</sup> of October. Plans are to operate on all HF bands and 6 metres on SSB, CW and RTTY. Particular emphasis will be on the low bands. QSL via DL7DF either direct (Sigi Presch, Wilhelmsmuehlenweg 123, D-12621 Berlin, Germany) or through the bureau. A web site for the operation can be found at <http://www.qsl.net/dl7df/> [TNX DJ7UC & 425 DX News]

**FM MARTINIQUE.** Gerard, F2JD (ex PY2ZDX, HK3JBR, HP1XBI) has announced a change in his departure date for the island of Martinique. He has delayed his departure for 1 month. He now intends to leave for Martinique in early September and will stay for approx. 4 months. Gerard will use the call FM/F2JD and intends to be active on SSB and CW on the HF bands. If he has the opportunity he will also try and

operate from some other islands in the Caribbean. [TNX F2JD & OPDX].

J2DJIBOUTI. "The 59(9) DX Report" reports that Houssein, J28FH, is a new operator in Djibouti. He is using a 10 metre only rig with a small amplifier (70 W) to a mobile antenna 3 metres high. He is building a 3 element beam for the HF bands. OPDX has found that he frequents the frequency 28580 kHz after 1930z. QSL via WA2VUY. [TNX The 59(9) DX Report and OPDX]

KC4 ANTARCTICA. Bert, WA1O, is heading back to Antarctica in November as part of the International Trans-Antarctic Science Expedition. The expedition will be setting up temporary camps for 3-4 days at a time along the route and Bert will try and operate from these camps in his spare time. Look for KC4/WA1O. [The 59(9) DX Report & 425 DX News]

KL7 ALASKA. In honor of the Canadian/American servicemen and women who served in the Aleutians, station KL7USI will be active from the Museum of the Aleutians on Unalaska Island, Alaska (AK-005S and NA-059), on the 24<sup>th</sup> (possibly also the 25<sup>th</sup>) of November. Also, look for a new island in the Alaska area (AK-NEW) for the "United States Island" award to be activated only for 24 hours on the 26<sup>th</sup> of November. Frequencies for both operations, check 28460 kHz (primary) and 14260 kHz (secondary). QSL via KL7JR. [TNX The Daily DX]

XT DJ7UC, DL4WK, DL7BO, DL7DF and DL7UFR will be active from Burkina Faso between the 10<sup>th</sup> and 15<sup>th</sup> of October. Plans are to operate on all HF bands, and 6 metres, SSB, CW and RTTY with an emphasis on the low bands. QSL via DL7DF either direct (Sigi Presch, Wilhelmsmühlenweg 123, D-12621 Berlin, Germany) or through the bureau. The web site for the operation is at <http://www.qsl.net/dl7df/> [TNX DJ7UC & 425 DX News]

XU Toni, EA5RM and Pedro Luis, EA7DBO will be active as XU7ABD from Sihanouk Ville, Cambodia between the 3<sup>rd</sup> and 11<sup>th</sup> of October. They expect to operate on 10-80 metres SSB and RTTY with some

CW. QSL via EA4URE (Union de Radioaficionados Espanoles, Apartado 220, E-28080 Madrid, Spain). [TNX EA5RM & 425 DX News]

## IOTA Activity

G The members of the Western DX Cluster Group Bill, G3WNI; Tom, G0PSE/Tom and Doug,

G0WMW will be active as GB0SM from the Isles of Scilly (EU-011) between the 30<sup>th</sup> of September and the 7<sup>th</sup> of October. They will operate on all bands 10-160 metres and possibly 6 metres on CW, SSB and probably RTTY as well. QSL via G3WNI either direct or through the bureau (bureau cards can be requested at [g0pse@qsl.net](mailto:g0pse@qsl.net)). [TNX G0PSE & The Daily DX]

MJ JERSEY. Barry, N0KV (M0CQS), currently living in the UK, says that he just received permission from the Jersey Amateur Radio Society to use their club station for the CQWW SSB Contest (October 28-29th). He will use the callsign MJ/N0KV from LaMoye, Jersey, Channel Islands, UK, from Zone 14 and operate as a Single Op or Multi/Single if he receives some local support. Barry also plans on operating for a period prior to the CQWW contest beginning on the 22<sup>nd</sup> of October. QSL via N0KV: Barry Mitchell, 12200 Boothill Dr., Parker, CO 80138 USA [TNX OPDX]

VK A large group of VK2s (including VK2EO, VK2NP, VK2RD, VK2PB, VK2ZL, VK2ARY, VK2JW and VK2XN) will be active (on SSB, CW and PSK) as VI2BI from Broughton Island (OC-212) between the 6<sup>th</sup> and 15<sup>th</sup> of October. QSL via VK2EO either direct (Geoff McGrorey-Clark, P.O. Box 76, Medowie, NSW, 2318 Australia) or through the bureau. [TNX VK2EO & The Daily DX]

VK9 Cocos/Keeling. Wal, VK6KZ and Don, VK6HK will be active as VK9CZ and VK9CK from Cocos/Keeling (OC-003) between 21<sup>st</sup> of October and the 4<sup>th</sup> of November. Two stations will be in operation with main concentration on 6 metres SSB and CW (conditions permitting). HF operation (40-10 metres) if 50 MHz conditions allow. [TNX VK6HK and VK4FW]

VP5 Frankford Radio Club members

WA2VYA, WA3RHW, K2WB and N2VW will operate VP5/ from VP5JM's QTH on Providenciales (NA-002), Turks and Caicos Islands, between 24 and 31 October. QSL via home calls. They will participate in the CQ WW DX SSB Contest (28-29 October) as VP5T (Multi-Multi). CW, WARC bands and PSK31 activity before and after the contest. QSL VP5T via N2VW (bureau cards can be requested via [n2vw@arri.net](mailto:n2vw@arri.net)). [TNX N2VW & 425 DX News]

## Special Events

AX8 Australia. Steve, AX8AM, will be operating as AX8AM, mainly on CW, from Darwin, Northern Territory until the 2<sup>nd</sup> of November 2000. Steve has been heard operating CW on 20 metres as early as 0630z and as late as 1300z and also on 40 metres at approx. 1230z. QSL via VK8AM, Steve Salvia, 1 Elliott Point, Larrakeyah, NT 0820, Australia.

GS2MP Scotland. The GM7V contest team will be using the callsign GS2MP from the Shetland Islands in the CQWW contest in October. The Shetland Islands count as a separate country, and so multiplier, from the rest of Scotland. Their web page is <http://www.gm7v.com>. [TNX The Daily DX]

SN600UJ POLAND. Look for the special event station SN600UJ to be active from the 20<sup>th</sup> of July until the 20<sup>th</sup> of October. The station will be celebrating the 600th anniversary of refounding of "Jagiellonian University" in Cracow, Poland. They are expected to operate on all bands CW, SSB and RTTY. QSL via SP9PKZ. [TNX OPDX]

VE Canada. A large group of operators will be active as VB2R from Zone 2 (James Bay Region, northwest Quebec) between 22 October and 4 November. They will participate in the CQ WW DX SSB Contest and might do some six metre operation (from rare Grid FO10) and possibly AO27 or UO15 if time permits. The special call commemorates the 100th anniversary of the birth of E.S. Rogers, Canadian amateur radio pioneer and inventor of the AC radio. QSL via VE3BY. The web site is at <http://www.fortunecity.com/marina/>



westindia/597/zone2 [TNX VE3SRE and 425 DX News]

**HF, POLAND (Special Event).** Now through November 6th, look for station HF6WR. The station is active to celebrate the 1000th anniversary of Wroclaw City in Poland. Activity will be on 80-10 metres, as well as 6/2 metres. Most of the activity seems to be on 15 metres between 1400 and 1930z. QSL via SP6ZDA, via bureau or direct address: Scouts Radio Club SP6ZDA, Box 41, 51-673 Wroclaw 9, Poland. A special diploma is available. For further information, check the Web page at: <http://www.wroclaw.tpsa.pl/user/sp6pwr> [TNX OPDX]

**KH5K Massimo Mucci, I8NHJ** (ex 1A0KM, JT1Y, E30GA etc.) has joined the team, which now includes AA7A, AH9B/W5, JH7OHF, K4UEE, KH6ND, KH7U, N4XP, NH6UY, NI6T, OH2BU, RZ3AA, VE7CT, WA1S and WB4JT. They will depart Honolulu on 15 October for Kiritimati Atoll (Christmas Island, Eastern Kiribati)-Palmyra (where they may have the opportunity to spend some time)-Kingman Reef. During at least 12 days at Kingman, they will be QRV on all bands from 160 to 6 metres, on CW, SSB and RTTY with up to six stations. They will depart at the end of October for Kiritimati and will return by air to Honolulu on 5 November. The team's major targets are Europe, where Kingman is most-wanted, WARC bands, low bands, RTTY and six metres. The pilots for the operation will be JA3AAW (Japan), DL1XX (Europe) and K6GNX (North America). Expenses for this DXpedition include over \$50,000 for transportation individuals and DX organizations, especially in Europe, are invited to send their contributions to N4XP (Tom Harrell, 2011 New High Shoals Rd, Watkinsville, GA 30677, USA). [TNX NI6T and 425 DX News]

## Round up

Peter, ON6TT, who is a seasoned world traveller and DX'er (currently 9A/ON6TT) has informed the DX community that he is moving on from his current assignment in Kosovo. Peter has been in Kosovo since February

working for the UNWFP. He is moving on to a new assignment and location in Pakistan. He expects to arrive in Islamabad sometime in November and expects to be in Pakistan for the next four years. He will try and set up a station for amateur operations while there. Mario, 5X1C, will also be part of Peters team in Pakistan. [TNX OPDX]

One phenomenon that all amateur radio operators, whether HF or VHF, should respect and take note of is lightning storms. The amount of damage and destruction that a single lightning strike can cause is incredible, and if it happens to be your station it can be soul (and rig) destroying. An interesting web page that explains the phenomenon of lightning was found in a recent issue of the 425 DX News. The web address is <http://lightningstorm.com/lightningstorm/gpp/lex1/mapdisplay.free.jsp>. The site is maintained by a US agency so the info contained is probably relevant to the US, but I found the info enlightening and the almost real-time maps entertaining.

I received an email from Len, VK8DKA, who informs me that a new group called 'The Timor Sea DX Group' was formed recently for the express purpose of activating new and rare Islands in and around the Timor Sea. Unfortunately, the email from Len went astray in the system somewhere and I received it only after the two DXpeditions Len was writing to me about were over. The DXpeditions were to Browse Island (using VK6BM) and Cassini Island (using VK6CJ). Both of these islands are situated on the northwest coast of Western Australia (CQ zone 29) and were to be new IOTA entities. It is a great pity that Len's email went astray, it was a great chance to let VK operators know of an event planned and staged by an Australian group. However, hopefully the group will have other projects in mind, and if so, I am sure they will let us know. The DXpedition to Browse and Cassini Islands seemed to be well organised and equipped. The group had with them a three band Yagi, a Cushcraft R-7 vertical and a trapped dipole for 40, 75 and 80 metres, ICOM and Yaesu transceivers and a 400W linear amplifier. The station logs were to be uploaded to respective web sites via satellite phones for QSO checking. Travel and accommodation for the DXpedition team members was

aboard the catamaran 'Tearaway' and some /mm operation was also planned using the members own callsigns. The team members were Dan, VK8AN, Terry, VK8TM, Len, VK8DK and Wally, VK8YS. The Timor Sea DX Group is a non-profit organisation and all expenses were met out of their own pockets, so donations would be welcome to cover costs. Donations, to help cover the cost of the two operations mentioned above, can be sent to The Financial Controller, Timor Sea DX Group, PO Box 1434, Katherine NT, Australia 0851. Web sites for the two operations can be found at, [www.qsl.net/vk6bm/index.htm](http://www.qsl.net/vk6bm/index.htm) for Browse Island, and [www.qsl.net/vk6cj/index.htm](http://www.qsl.net/vk6cj/index.htm) for Cassini Island.

## Sources

Thank you to those who have called me and congratulated me on the DX Notes column. However, I must point out that the bulk of the information is gleaned from the sources mentioned at the end of each nugget of information. Without the kind permission of these people, organisations and publications there would be no DX Notes. So, please, if you have or hear of any news regarding DX, especially from a VK point of view, forward me a copy either by normal mail or email.

Finally, thanks go to the everyone for the items of DX news, including special thanks to the following people and organisations, The OPDX Bulletin by KB8NW/OPDX/BARF80, 425 DX News and of course Bernie W3UR & 'The Daily DX'.



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# Towards a permanent place in space

## Imminent launch of Phase 3D

By the time you read this column, things should be getting into top gear at Kourou for the launch of the long awaited Phase 3D satellite. Many disappointing launch delays have put this, the new flagship of the AMSAT fleet a couple of years behind its original launch date. AMSAT-DL Vice-President Peter Guelzow, DB2OS, recently reported that the Phase 3D satellite "will be launched at the end of October or beginning of November." Ariane 5 launches have been postponed until several components could be

checked aboard the launcher. DB2OS reports that Arianespace re-assigned the launch numbers. "There will be two more Ariane 4 and one Ariane 5 launches," said Peter, "but because Arianespace did not yet publish the new official launch manifest, I can't be more precise." DB2OS also reported that more news should be available after the AR-506 launch, currently scheduled for September 14th. "We are indeed on AR-507," said Peter, "and the Phase 3D launch campaign should start on September 11th in Kourou!" [Courtesy of ANSI].

The many launch delays of P3D have

caused lots of discussion in various amateur radio forums. Much criticism has been levelled at the AMSAT organisation and the vast majority of this has been ill-informed or wrongly motivated. The facts are simple. Firstly: We (the amateur radio service) are a secondary, non-paying customer. We could not possibly pay for a commercial launch. This will always be so except in the cases where the amateur package 'hitches' a ride on a larger commercial payload. Phase 3D unlike many is a purely amateur radio satellite. It has to take its place in the launch queue as a secondary payload to be launched if and when space is available. A paying customer comes along and we lose our place.

Secondly: A number of the delays were due to problems with the launcher itself. This also delayed launch of many commercial payloads which pushed P3D further back in line. Why not negotiate a launch on a different launcher? This brings us to point three. Phase 3D is designed to be a high altitude satellite. Its orbit will take it out 50 000 km from Earth in a huge elliptical orbit giving hemisphere-wide coverage. The vast majority of satellite launches are into low-earth-orbits which are roughly circular in shape and usually no more than a thousand kilometres in altitude. These launches are very common but they are no good for satellites like P3D. There is a fourth and very important reason. The mechanical launcher interface, a huge fabricated aluminium structure, had to be designed to fit a specific rocket launcher system and is in fact part of that system, the builders simply had to stick with Arianespace. Phase 3D is a very sophisticated satellite with many advanced communication systems. It will be at the forefront of amateur radio experimentation for many years. The wait will be worth it. If you require a complete up-to-date listing of

### The AMSAT organisation

AMSAT (Amateur Radio Satellite Corporation) is a worldwide organisation with its roots in the USA. Its origin can be traced back to 1958, just a year after the launch of Sputnik-1. Since that time AMSAT members have been involved in the design, building, launching, commissioning, upkeep and of course, the day-to-day use of amateur radio communication satellites. The parent body is AMSAT-NA (North America) and many other countries have similar special interest groups operating.

### AMSAT-Australia

Our local organisation is known as AMSAT-VK. The National Co-ordinator is Graham Ratcliff VK5AGR.

### Membership of AMSAT-Australia

AMSAT-Australia operates an open membership system. No formal application is necessary and no membership fees apply. From time to time new software, firmware and hardware is developed and distributed through AMSAT-VK channels. Write to the co-ordinator to express your interest or pop up on the HF net.

### AMSAT-Australia HF net

The AMSAT-Australia net meets formally on the second Sunday evening of the month. During the winter months in South Australia (end of March until the end of October) the net meets on 3.685 MHz +/- QRM at an official start time 1000utc with early check-ins at 0945utc. During the summer months when daylight saving is in operation in South Australia (end of October until end of March) the net meets on 7.068 MHz +/- QRM at an official start time of 0900utc with early check-ins at 0845utc. The times and frequencies have been chosen as the best compromise for an Australia-wide net taking into consideration seasonal propagation changes and the various state summer time variations. The net is open to all amateurs, beginners or experienced who have an interest in amateur radio satellites. Help and information for beginners in particular, no matter how trivial, is freely and cheerfully available on this net.

### The AMSAT Journal

An excellent bi-monthly journal is available with formal membership of AMSAT-NA. It contains details of practical projects and ranges over all aspects of amateur radio satellite operations. As of 01Jul00 the cost of AMSAT-NA annual membership will be US\$45 payable to AMSAT-NA 850 Sligo Ave, Silver Spring, MD 20910-4702 U.S.A. or you can phone, fax or email your subscription using your credit card. The phone number is 0011-1-301-589-6062, the FAX number is 0011-1-301-608-3410 and the email address is [martha@amsat.org](mailto:martha@amsat.org)

All Communications regarding any matters mentioned above should be addressed to:

AMSAT-Australia.  
GPO Box 2141, Adelaide, SA. 5001.  
email, [vk5agr@amsat.org](mailto:vk5agr@amsat.org)

transponder designations, modes and frequencies to be used on P3D, try looking at <http://www.uk.amsat.org/satfreqs.htm> on the internet. It also features complete lists for all other operational amateur radio satellites.

## ARISS Takes Shape

Things are beginning to look good for the amateur radio operations on board the International Space Station (ISS). Recent Space Shuttle journeys to the ISS have begun the task of delivering and installing the amateur radio apparatus on board the crew's quarters. Latest news indicates it will use a temporary antenna system when the first crew arrives and will be connected to its permanent antennas when they are delivered to the ISS. The antenna system to be installed on ISS was built by a team comprising amateurs from Italy, Russia and USA. The antennas are completed and ready for delivery but they are not scheduled for flight to ISS until some time in 2001. When fully operational the ARISS (Amateur Radio aboard the ISS) will consist of transceivers, modems, computer, software and connecting cables allowing a wide range of activities including voice modes, data modes, ATV, SSTV etc. Many of the operations such as SSTV can be automated. ARISS is designed to give amateur radio a permanent place in space. It will be a worthy successor to the amateur radio operations on MIR and on the Space Shuttle. We can look forward to an increased interest in AMSAT operations generally as a result of this permanent presence. Congratulations to the ARISS team whose efforts over the past 3 years or so have resulted in this new system being accepted by the International Space community as a integral part of the ISS crew's recreational activities. So much so that the gaining of an amateur radio licence is now considered to be a 'normal' part of the Astronaut/Cosmonaut training program.

## Best Bangs for Bucks.

This is a well known piece of computer jargon which, roughly translated means getting the best value for your money. This is often a concern to operators contemplating involvement in the amateur satellite field. Where to put your hard earned cash to work for best effect. There is an old maxim that applies equally to satellite operation or HF DX.

"Get your antenna right and the rest is easy".

The most common source of dissatisfaction and frustration in new operators stems from neglecting this important point. You may be able to get along with little more than a piece of wire on some of the lower HF rag-chewing bands. I have made many successful contacts using rudimentary antennas. You simply cannot expect to do well with the satellite signals unless you give it your best shot. But even supposing you put most or all of your resources into the antenna system, there still remains the question of priorities. Few of us have the luxury of being able to set everything up according to the book with the best equipment available.

So, just taking the antenna system as an example, what are the priorities? The essential elements are: the antenna itself, the pre-amplifiers, the rotators, the feedline and the feedline connectors. I've assumed a couple of things here. If you want good results you will need to use a steerable high-gain system. You will hear stories about working MIR on a hand-held etc. and I've done this sort of thing myself but if you are serious about satellite operations you will soon learn that conditions have to be perfect for this type of contact. Conditions are rarely perfect.

Here we see the old maxim come into force. Money spent on the antenna will far out-perform a similar amount spent on obtaining more power output. So let's take it a step at a time. Money spent on a good, high gain yagi is money well spent. It could be circularly polarised with polarity switching but that can wait. The gain doesn't have to be bank-breaking. Antenna gain is the reciprocal of beamwidth and you have to 'find the satellite' with the antenna. Too high gain is just as bad as too low gain. Ten to twelve dB is a good starting point and this can easily be achieved in low cost home-brew designs. I won't even contemplate not using a receive pre-amplifier. This is one of the most important bits of gear in any satellite station. Satellite signals are weak. They come from a long way off. They often emanate from a transmitter running no more than a fraction of a watt. You need to present the signal to the first GaAsFet in as good condition as possible. This is where we establish the entire system's signal to noise ratio, and this is the spot

where most 'bangs for bucks' will be obtained. Get it right here and the rest is easy. Get it wrong here and no amount of money poured into the rest of the system will fix it. Make no mistake, the place for the pre-amp is right at the antenna feedpoint. Or as close as possible. Try really hard to do this, it's the most critical part of the system. GPS receivers work because the base of the antenna is welded directly onto the input gate of the first GaAsFet.

Next, remember that any length of feedline, no matter how short, is important at VHF/UHF. Don't run away with the idea that just because you only have 50 feet or less of feedline that you can get out that old bit of co-ax from the box under the bench and press it into service. You will be disappointed and you may never find out why. Probably blame AMSAT or the satellite itself or conditions or sunspots or ... no. Buy some new co-ax, it won't break the bank and while you are about it buy new connectors rather than de-soldering old ones. Seal the co-ax connectors carefully at each end. A dollar spent on co-ax sealing compound will be worth \$50 to you in a years time. You can't leave out any of the above steps if you want to have a successful satellite earth-station. A couple of hundred dollars spent here can make the difference between working the birds and not being able to hear them. Just about any rig can be used if it works, provided you have not skimmed on the antenna system. I regularly use as little as 5 watts to uplink to the digital satellites. Even large picture files can be uploaded at this power level without repeat requests if you get the antenna system right. Best bangs for Bucks? Put them into your aerial system.

## Moon Pictures on UO-36.

Twice in recent months the cameras on board UO-36 have been turned around to photograph the Moon. The images have been excellent. In one case a picture of a large crescent of the Earth centred around the North Sea and looking towards Iceland was in the immediate foreground and the Moon, a tiny dot centred in the background just above the Earth horizon. This picture was taken with the wide angle camera and it was spectacular. The latest picture taken in early September was a narrow angle shot of the Moon in which it is

possible to see the mares and larger craters.

Both these pictures have something in common. They will both have required very accurate orientation of the satellite to aim the cameras in the right direction. UO-36 is in a low-earth-orbit, some 700 km altitude. It is stabilised by a slow spinning motion around its "Z" axis, perpendicular to Earth and also by means of a 'gravity-gradient-boom'. This device is a telescopic mast several metres long which is deployed after the satellite is safely in orbit. At the end of the boom is an instrument package which constitutes a mass designed to react with the main satellite body and the Earth's gravitational field to form a three body couple. When set up this system is very stable and keeps the bottom of the satellite facing towards Earth. This is the surface that houses the earth-imaging cameras.

The spin can be stopped for taking panoramic series of earth-images. But to take pictures of the Moon means re-orienting the satellite and pointing it at the Moon rather than straight down. As you can imagine this is a delicate process which has to be performed slowly by remote control from the ground station.

It is a credit to the control team at Surrey that such successful pictures of the Moon have been taken using this method. Use your web search engine to visit the University of Surrey's UoSat web site. It will provide a host of information about this series of satellites and an exciting look at things to come.

## Old Favourite Tracking Programs.

Many operators have been waiting patiently for news of the release of the updated version of InstantTrack. I have no further news except that 'reliable sources' still say that release is imminent. The final version has been in the hands of the beta testers for some time and all that remains to be sorted out is the distribution method. News came to hand a few days ago of another old favourite, "QuickTrack" AMSAT-NA announced recently that there are updated DOS and Windows versions of this program available now. Both versions are compatible with the y2k NASA keeps format. The cost is \$US25 and it is available by email attachment if you get in touch with Martha at AMSAT-NA headquarters. Her email

address is [martha@amsat.org](mailto:martha@amsat.org) and the transaction can be done by credit card.

## Telemetry Programs for Monitoring Phase 3D.

Peter DB2OS who is presently in Kourou doing the final pre-launch tests on Phase 3D has announced that once the tests are complete he will release the precise format of the engineering telemetry blocks to be broadcast by P3D. The data format will be the same as for P3C, ie. 400 baud psk. If you have the G3RUH decoder for this format you are in business. I must dust mine off and fire it up. It has been in storage since P3D de-orbited. The telemetry format is similar but not exactly the same. Windows and DOS software for the deciphering and display of this data is ready for release when Peter has finalised the checks. It should be in our hands prior to the launch date. The more stations set up to monitor this data in the early days, the better the control stations will be able to monitor the health of the new satellite. If you have the gear, please get it ready for the launch. The data from the first few orbits could be vital.

ar

# Radio and Communications

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# AR Awards

John Kelleher VK3DP, Federal Awards Officer  
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## A few words about obtaining awards.

Most award sponsors allow the general certification rule (or GCR) list, in lieu of actually sending QSL cards. You need to have the cards! Your GCR list should be made in strict observance of the rules specified by the award manager/sponsor. It also means obtaining the signatures of two witnesses, verifying the fact that you indeed possess the necessary cards to obtain the award, and that your application is correct in every detail. If the award specifies club officials you should make sure that their title follows their signature(s). A tiny minority actually want to see the necessary cards. If you want the award, you are going to risk the cards. Check in advance to see if photo-copies of the cards are acceptable. Personally, I have not lost any cards, but then, I don't rest easy until they are returned.

To get the cards you require for awards, you've got to make lots of contacts. If you have been reasonably active for a few years, then you've got it made. If you have been diligent in sending cards for all your DX contacts, fine. If not, you can always refer back to your logs, can't you?

A few words about your QSL card. If you want a good percentage of replies your card should be neat, interesting, and accurate. Size should be no larger than 13 x 9 cm, which can vary by a few mm. In brief, your card should be:

Be reasonably attractive: (pictures are great, but not always necessary)

Contain all the QSO data in logical format.

Show the contact time accurately in UTC.

Indicate your QTH, and any awards your card is good for.

Do not apply for awards until you possess all the necessary cards!

International Reply Coupons or IRC's are the most universal medium of currency amongst award hunters, and can be obtained from General Post Offices, or from another operator who has plenty in his/her possession!

Always send valid IRC's of the current edition, which are postmarked on the left hand side. I have found that post office labels, and not stamps should be affixed to the envelope containing your application(s). If you require any further information, I will gladly answer any queries I receive.

Finally, keep an eye on DX bulletins which are published almost daily on certain web pages, or just ask your DXing friends what's happening around the bands. Or peruse the DX information column published elsewhere in this magazine.

### Bulgaria

*Bulgarian Federation of Radio Amateurs Series.*

General requirements: Available for contacts or SWL on CW SSB/AM or mixed modes. GCR list accepted. Fee for each award is 10 IRC's. Apply to:-

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### Black Sea Award.

Make 60 contacts with different amateur stations located in countries bordering the Black Sea. Contacts since January 1, 1979.

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Work Bulgarian stations since Jan. 1 1965. DX stations need 10 contacts with LZ1, LZ3, LZ5 and 10 with LZ2, LZ4 and LZ6, with no band restrictions. Total of 20 contacts.

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100 contacts with different LZ stations during one calendar year. Contacts after Jan. 1, 1979.

### W 28 Z ITU Award.

Contact the following countries of ITU Zone 28 since Jan. 1, 1979. Y2 DL FC/TK HA HB9 HB0 HV I IS LZ T7 OE OK OM S5 SP SV SV5 SV9 SY YO YU ZA 1A0 4N4 4U (Vienna) 9H and 4U1ITU (Geneva).

The award is issued in 3 classes:-

Class 1 - 28 different stations in 20 of the above listed countries.

Class 2 - 28 different stations in 16 of the above listed countries.

Class 3 - 28 different stations in 10 of the above listed countries. In addition, 5 QSO's are needed with different LZ stations.

### 5 Band LZ Award.

Contact one LZ1 and LZ2 on each of the bands 3.5 7 14 21 and 28 Mhz

For a total of 10 contacts. QSO's since Jan 1, 1979.

### Ghana

#### G.A.R.S. Fellowship Award.

Contact 5 different 9C stations who are members of the Ghana Amateur Radio Society on a single band on or after Jan 1, 1994. GCR list and fee of US\$5.00 to go to:-

Award Manager  
PO Box 3936  
Accra, Ghana.

### Gibraltar

#### ZB2 Award.

Work 5 different ZB2 stations. No time, band, or mode restrictions. SWL OK. GCR list and fee of US\$3.00 to:-

Gibraltar Amateur Radio Society  
PO Box 292,  
Gibraltar.

### Guam

#### Worked Guam Award.

Contact any 5 Guam stations. No time, band, or mode restrictions. GCR

List and US\$2.00 to:-

MARC  
Box 445  
Agana Guam 96910.

### Guantanamo Bay

#### Worked All Guantanamo Award.

Work 6 KG4 stations during a 3 year period and send GCR list for stations Still on base and photocopy of cards for amateurs no longer stationed there. No charge, but return postage would be thoughtful. Not available for SWL.

Send to:-  
GARC  
PSC 1005  
Box 73, FPO AE  
09593-0011

Good hunting and best 73 de John, VK3DP now at [redtoo@rabbit.com.au](mailto:redtoo@rabbit.com.au)

ar

# AR Contests

Ian Godsill VK3DID  
E-mail: contests@wia.org.au

## Contest Calendar October — December 2000

Oct	1	RSGB 21/28 MHz Contest (SSB)	(Aug 00)
Oct	7	PSK31 Rumble	
Oct	7/8	Oceania DX Contest (SSB)	(Oct 00)
Oct	8	RSGB 21/28 MHz Contest (CW)	(Aug 00)
Oct	14/15	Oceania DX Contest (CW)	(Oct 00)
Oct	15	Asia-Pacific Sprint (CW)	(Jan 00)
Oct	21/22	JARTS WW RTTY Contest	(Sep 00)
Oct	21/22	Worked All Germany Contest (CW/SSB)	(Sep 00)
Oct	28/29	CQ WW DX Contest (SSB)	(Sep 00)
Nov	1-7	HA QRP Contest (CW)	
Nov	4/5	WIA Spring VHF-UHF Contest	(Oct 00)
Nov	4/5	Ukrainian DX Contest (CW/SSB)	
Nov	5	High Speed CW Club Contest	
Nov	10-12	Japan Int. DX Contest (SSB)	(Dec 99)
Nov	11/12	WAE RTTY Contest	(Sep 00)
Nov	11	ALARA Contest (CW/SSB)	(Sep 00)
Nov	11/12	OK/OM DX Contest (CW)	
Nov	18/19	LZ DX Contest (CW)	
Nov	25/26	CQ WW DX Contest (CW)	(Sep 00)
Nov	25/26	CQ WW SWL Challenge	
Dec	2/3	EA DX Contest (CW)	
Dec	9/10	ARRL 10 Metres Contest	(CW/SSB)
Dec	16	OK DX RTTY Contest	
Dec	16/17	Croatian CW Contest	
Dec	16/17	Stew Perry 160 metres Distance Challenge	(CW)
Dec	16/17	International Naval Contest	(CW/SSB)
Dec	17	RAC Canada Contest	(CW/SSB)
Dec	26 Jan	Ross Hull Memorial VHF-UHF Contest	(Nov 00)
Dec	30/31	Original QRP Contest	(CW)
Dec	31/1	15 <sup>th</sup> Internet CW Sprint	(CW)

Thanks this month to VK2FI VK4EV JE1CKA VK3KWA

Greetings to all readers and contestants. So the year is moving on, with time now to prepare for the VHF-UHF events for the coming Spring and Summer. These have always been a focal point for many operators, but whether they can be called "popular" may be open to debate. There is room for all of you, so please check your station and get ready for some higher frequency work for a change.

Also, please do not forget the ALARA Contest next month. This is a good one for practice, and although intended to let the girls have a try, should not be left to them alone. The late Ivor VK3XB was most regular in calling on CW in order to help the ladies along. I hope that someone else will take up this task this year.

### Results

I am pleased to list some results below,

especially of VK events. However, I am personally saddened to note the comment about absence of a CW log from any Novice. I cannot believe that CW is so hated by all Novices that no-one at all will ever use it! By comparison, just look at the score for VK3JRC!

Stewart is becoming quite active on several bands and particularly on CW. Good luck Stewart and hope to see your call more often in

## Contest results.

### RD

There were mixed comments about the level of participation this year, especially on CW. I must confess I did not do well, but not for the want of trying. The results when they come should be most interesting.

### Oceania Contest

I hope that you gave of your best efforts in the Oceania DX contest. I use past tense, because probably by the time you read this the contest will have finished. However, now the work of preparing the log begins, so please do not neglect that important part of the contest.

### VK2APK

It would seem that I may have printed a wrong score for Dietmar VK2APK in the May notes. Apparently his total score was 2,148,000 points in last year's VK/ZL Contest.

By any standards this is an impressive score. We all know Dietmar as one of VK's leading contestants (just look at his scores for the 1999 SAC below).

No doubt one needs a certain natural ability to do well in contesting as in other things, but effort and application are what get us through. In other words – DETERMINATION. What I say is please let's have more of it, certainly in contesting where your own skills and satisfaction level will be enhanced, but also in all aspects of our hobby.

### SWL — Ever Tried It?

The day the Pacific 160 Metres Contest was to be held I had a dose of the 'flu. Instead of taking part I listened for an hour or so.

I really enjoyed this and it has shown me that there is another dimension to contesting, viz tracking down contacts and writing down the details. I do not doubt that it can be just as demanding as giving numbers, but to some extent the pressure to make as many contacts as possible presumably would not be there.

Most contests have an SWL section and if you do not want to take part in the transmitting department, try a listener's log. It is all good fun, contributes to the activity of the event and enhances your experience. Some Europeans even have special contests just for SWLs!

### CN8

A note from the Bavarian Contest Club says that they will be operating again from Morocco as CN8WW in the CQ WW Contests. If you need this country, here is an opportunity.

## Thanks

Finally this month, my thanks to some readers who sent suggestions via e-mails. One was about SWLing and another was from a very well-known contestant, Martin VK5GN, following my notes about contest logging programs earlier in the year. Thanks to you all.

73 and hear you in a contest soon.

Ian VK3DID E-mail: [contests@wia.org.au](mailto:contests@wia.org.au)

## Results SAC 1999

### SSB

(Call\cat\points\mult\score)

VK2APK	SOHP	162	81	196	15876	OC Plaque
VK4ICU	SOLP	130	62	132	8184	OC Plaque

### CW

VK2APK	SOHP	167	237	82	19434	OC Plaque
VK8HA	SOHP	98	98	54	5292	
VK4TT	SOHP	85	95	46	4370	

### Results VK Novice Contest 2000

From Bob VK2FI, Contest Manager  
(Call\name\mode\score)

	PHONE	CW
VK2IBT	Ken	71 -
VK2HT	Nev	28 -
VK2CW	Greg	07 -
VK2CA	Allan	455* -
VK3YE	Peter	36 22
VK3JRC	Stewart	19 67*
VK3DID	Ian	- 24
VK1MOJ	Olaf	77* -
VK5EMI	John	09 05
VK7LUV	Susan	137*+ -
VK7JAB	Alan	63 -

\* = certificate

+ = plaque

Keith Howard VK2AKX Trophy for Novice with highest Phone score goes to Susan Brain VK7LUV. Congratulations Susan

However, it is sad to note that no Novice CW log was received, therefore the Clive Burns Memorial Trophy cannot be issued this year.

Thanks to all who took part.

## Results QRP Day 2000

From Ron Everingham VK4EV, Contest Manager  
(Call\score\place)

* VK3DID/QRP	114	points 1 <sup>st</sup> Place
* VK3LK/QRP	56	points 2 <sup>nd</sup> Place
* VK5BLS/QRP	30	points 3 <sup>rd</sup> Place
VK2BO/QRP	22	points
VK2PH/QRP	14	points
* VK3YE/QRP	13	points
VK3BYD/QRP	11	points

\* = station used homebrew transmitter or transceiver.

## Results of Pacific 160 Metres Contest, July 2000

### CW (Call\score)

1	ZL2AS	378 points
2	W8JI	270
3	AX2BQQ	216
4	VK6VZ	168

### SSB

1	VK3EW	820 points
2	ZL2AS	252
3	ZL1BRY	238

### MIXED

1	VK4AXM	189 points
2	ZL2AWH	125
3	ZL2AJB	76
4	VK2PH	68

## SWL

1 VK3VP 261

Comments: Conditions were reasonable on the night, with W8JI being well received by several of the participants. The introduction of the Mixed category seems to have been a success, and it was also pleasing to see an SWL log for the first time. Thanks to all who took part, even if you did not send in a log. VK3DID, Contest Manager

## Results Commonwealth Contest (BERU) 1999

### VKs only. (Place\call\score)

OPEN	RESTRICTED		
9 VK2BJ	7122 3	VK6VZ	3999
12 VK4EMM	6725 6	VK2APK	3929
40 VK6HQ	2687 17	VK4TT	2759
51 VK5GZ	2294 24	VK8HA	2463
53 VK3ZC	2207 34	VK6AJ	2015
56 VK2DID	1854 40	VK2BQQ	1498
66 VK3KS	767 42	VK5GN	1254
68 VK5HO	498 47	VK4XW	534
48 VK8AV	450		

## ALARA CONTEST

Saturday 11 November, 2000 0001z - 2359z

**OBJECT:** Open to all licensed operators, YLs work anyone, OM and Clubs work YLs only.

**BANDS:** 80m - 10m (no WARC). **SUGGESTED FREQUENCIES:** 28.380 - 28.410 MHz; 21.170 - 21.200 MHz; 21.380 - 21.410 MHz; 14.250 - 14.280 MHz; 7.070 - 7.100 MHz; 3.560 - 3.590 MHz.

**MODES:** CW; SSB. Note: CW is very much encouraged, but please keep it within the suggested frequencies.

**CATEGORIES:** CW; SSB; MIXED; SWL. **CALL:** Phone "CQ ALARA CONTEST"; CW: YLs call "CQ TEST ALARA"; OM call "CQ YL".

**EXCHANGE:** RS(T) plus serial number starting at 001; name; whether ALARA member or Club station. Note: Stations may be re-worked on the same band and mode after an interval exceeding one hour. No net, list, crossmode or crossband operations permitted.

**SCORE:** CW/Phone - five points for ALARA member contacted; four points for YL non-member contacted; three points for OM/Club contact. On CW, QSO where one operator is a Novice, score DOUBLE points.

**LOGS** to show date; time UTC; band; mode; call sign worked; exchange; name of station worked; whether Club; points claimed. Logs may be single entry, except Australian YLs entering for the Florence McKenzie CW Trophy should use separate CW log. Show name, address, call sign of operator, points claimed. Contest Manager's decision will be final.

**SEND LOGS** by 31 December, 2000, to: Mrs. Marilyn Syme VK3DMS, 99 Magnolia Avenue, Mildura, 3500, Australia. Various CERTIFICATES will be awarded.

## SPRING VHF-UHF FIELD DAY 2000

from John Martin (VK3KWA), Contest Manager

Sat. 4 November - Sun 5 November

VK6 only: 0400z Sat - 0400z Sun

Other Areas: 0100z Sat - 0100z Sun

The next Spring VHF-UHF Field Day will take place on November 4 and 5, 2000. The date is a week earlier than in past years, in order to avoid clashes with other events including the Leonids meteor shower. There are no rule changes this time.

There are several ways of getting a good score in the Field Day. The first three are - as estate agents say - "location, location and location". Adding an extra band will increase your number of contacts and your grid square total. Alternatively you can make significant scoring gains if you are able to hop between grid squares.

Please check the log requirements carefully. Every year some entrants forget to claim points for the grid squares they operated from, and some logs do not show clearly whether the grid square total includes the squares activated as well as the squares worked. It could be helpful to include a list of squares activated and worked for each band, as a reminder to claim the full score that you are entitled to.

A computer program is available which will convert between map co-ordinates and Maidenhead locator squares, and calculate the distance between stations. It can be obtained from the addresses given below.

Please also note the dates for the next Summer Field Day - January 13 and 14, with the same rules as below.

### Duration

VK6 only: 0400 UTC Saturday November 4 to 0400 UTC Sunday November 5, 2000. All other call areas: 0100 UTC Saturday to 0100 UTC Sunday.

### Sections

A: Portable station, single operator, 24 hours.

B: Portable station, single operator, any 6 consecutive hours.

C: Portable station, multiple operator, 24 hours.

D: Home station, 24 hours.

Single operator stations may enter both Section A and Section B. If the winner of Section A has also entered Section B, his log will be excluded from Section B.

If two operators set up a joint station, they may enter Section C under a single call sign, or sections A/B under separate call signs. Stations with more than two operators must enter Section C.

### General Rules

One call sign per station. Operators of stations in Section C may not make contest exchanges using call signs other than the club or group call sign. Operation may be from any location, or from more than one location. You may work stations within your own locator square.

A station is portable only if all of its equipment, including antennas, is transported to a location which is not the normal home location of its licensee.

Repeater, satellite and crossband contacts are not permitted. No contest operation is allowed below 50.150 MHz. Recognized DX calling frequencies must not be used for any contest activity. Suggested procedure is to call on .150 on each band, and QSY up.



## Contest Exchange

RS (or RST) reports, a serial number, and your four-digit Maidenhead locator.

## Repeat Contacts

Stations may be worked again on each band after three hours. If the station is moved to a new locator square, repeat contacts may be made immediately. If the station moves back into the previous locator square, the three hour limit still applies to stations worked from that square.

## Scoring

For each band, score 10 points for each square in which your station operates, plus 10 points for each locator square worked, plus 1 point per contact. Multiply the total by the band multiplier as follows:

6 m	2 m	70 cm	23 cm	Higher
x 1	x 3	x 5	x 8	x 10

Then total the scores for all bands.

## Sample Scoring Table

Band	QSO Points	Locator Pts	Multiplier	Total
6 m	100	+ 200	x 1	= 300
2 m	60	+ 120	x 3	= 540 etc.
Overall Total				= 840

## Logs

For each contact: UTC time, frequency, station worked, serial numbers and locator numbers exchanged, points claimed.

The front sheet should contain the names and call signs of all operators; postal address; station location and Maidenhead locator; the section entered; a scoring table; and a signed declaration that the contest manager's decision will be accepted as final.

## Entries

Paper logs may be posted to the Manager, Spring VHF-UHF Field Day, 3 Vernal Avenue, Mitcham, Vic 3132. Electronic logs can be e-mailed to [jmartin@xcel.net.au](mailto:jmartin@xcel.net.au). The following formats are acceptable: ASCII text, Office 97 RTF, DOC, XLS, MDB, or PUB, or Works 99 WKS. If you use Office 2000, please save the files in Office 97 format.

Logs must be received by Friday, December 1, 2000. Early logs would be appreciated.

## OCEANIA DX CONTEST 2000

For many years this event has been known as the "VK/ZL/Oceania Contest". It is managed alternately by WIA and NZART. This year it is the turn of the latter society and the Contest Manager, Brian ZL1AZE, decided that it was time to try and encourage more activity into this event.

## Changes

Consequently, he has introduced five changes and I commend them to you all. They are –

1. change of name to "Oceania DX Contest" in the hope of getting more participation from other countries than just ZL and VK within the Oceania boundaries.
2. introduction of 160 metres, with an allotted score of 2A POINTS for any contacts on this band.
3. allowing Oceania stations in the same country to contact each other for points and multipliers. It is hoped that this

will encourage activity on 80/160 metres, where it is often difficult to make true DX contacts.

4. addition of a Single Band entry category.

5. institution of the the ZL2TT Memorial Cup in honour of Ron Wills, keen contest operator and NZART Contest Coordinator at his death in February this year (see note "AR" Contests, April 2000, page 45). This cup is to be awarded to the highest scoring Single Operator Phone station in Oceania and the successful entrant will receive a nicely engraved small cup in recognition of his efforts.

## Advertise Yourself and Your Country

This contest will occur over the first two weekends in October. For some years it has seemed that our really great opportunity to present ourselves on the bands has been sadly neglected by many VKs – and, I suspect, ZLs as well.

This year we shall still be using the AX callsign at this time, so here is a WONDERFUL OPPORTUNITY for us all to be heard, let others know that we are not all asleep or gone to the footy or recovering from the Olympic Games or whatever.

## Help Others

I am sorry to say that the concept of doing something for others is not a popular one in our society at the present time. The emphasis is on ME – what do I get out of it? Blow you, I'm OK. Me and my friends (instead of my friends and I). OK, so what would you get out of it? Practice, experience, the satisfaction of having contributed to a national event and the knowledge that you helped a fellow amateur with a DX contact. Of course, it follows that you may have to be prepared to send him a QSL card at some time, but that too is a recognised part of DXing.

Let me assure you that there are many DX stations come on for this contest in the expectation that they will work VKs and ZLs, which they cannot always do with ease. Please consider their disappointment and concern when they hear so few of us.

THIS YEAR IS THE GRAND OCCASION TO CHANGE THIS and I urge you all to tune your stations now in order to join in in October. SSB will be on the first weekend and CW on the second. Between these two modes there is something for everyone.

## Software

For those of you who use logging software, don't despair. There is an excellent program by John VK4EMM called Quickscore. Intended to read the .bin file of the CT logger, John has designed his program to cover several of the important – no, sorry, they are ALL important – major VK contests. It may be downloaded from <http://www.uq.edu.au/radiosport/>

(And while you are there, have a look at the Monthly Report. This is always well worth keeping an eye on, even if you have to turn off your speakers whilst you concentrate!)

## Make the Manager Work

Give the Contest Manager something to keep him busy – after all, he tells me that he has an excellent Internet connection and logs of 40 pages should not worry him! (To which I say – BRAVE FELLOW!) So how about we put him to the test? Let him make good his boast!

So there it is – it's up to us all. The Rules are below. Please read them carefully and prepare.

Meanwhile, good contesting and 73  
de Ian VK3DID

E-mail: [contests@wia.org.au](mailto:contests@wia.org.au)

## Results WRTC2000

First places to the team K5TJ/K1TO

VK team operated as S546Q

(Mode\place\score)

CW 41 825 SSB 53 258

### 2000 Oceania DX Contest

(formerly VK/ZL/OCEANIA DX Contest)

from Brian ZL1AZE, Contest Manager

1. General: The aim of the contest is to promote contacts with stations in the Oceania region (VK, ZL, Pacific Islands and other locations within the IARU Oceania WAC boundary).

2. Contest Period:

Phone Contest: 7 - 8 October, 1000 UTC Saturday to 1000 UTC Sunday

CW Contest: 14 - 15 October, 1000 UTC Saturday to 1000 UTC Sunday

3. The Object is for

- Oceania stations to contact as many stations as possible inside and outside Oceania
- Non-Oceania stations to contact as many stations as possible inside Oceania

4. Bands: 160 m - 10 m (no WARC bands).

5. Categories are:

- Single operator all bands
- Single operator single band
- Multi-operator all bands
- Multi-operator single band
- SWL (Receive Only)

Single operator stations are where one person performs all operating, logging and spotting functions.

6. Exchange: RS(T) plus a three or four digit number starting at 001 and incrementing by one for each contact. Multi-operator all band entries may use a separate serial number for each band.

7. Multiplier: On each band this is the number of prefixes worked on that band. A "prefix" is the letter/numeral combination forming either the first part of the callsign, or else the normal country identifier for stations using their home callsign in another DXCC country, e.g. W8, AG8, HG7 and HG73 are all separate prefixes. The prefix for both N8ABC/KH9 and KH9/N8ABC is KH9. Portable designators without numbers are assumed to have a zero after the letter prefix, e.g. N8ABC/PA becomes N8ABC/PA0. Any calls without numbers are assumed to have a zero after the first two letters to form the prefix, e.g. RAEM becomes RA0EM. Suffixes indicating maritime mobile, mobile, portable, alternate location, and licence class do not count as prefixes, e.g. /MM, /M, /P, /A, /E.

8. Points: All stations score twenty points per contact on 160 m; ten points on 80 m; five points on 40 m; one point on 20 m; two points on 15 m; and three points on 10 m.

9. Final score is total QSO points multiplied by the total number of multipliers. Note that the same multiplier prefix can be claimed once on each band.

10. Logs:

Transmitting stations are to submit a separate log for each band showing date; time in UTC, callsign of station worked, RS(T) and serial number sent, RS(T) and serial number received, points claimed and new multipliers.

SWL stations are to submit a separate log for each band showing date; time in UTC; callsign of station heard; callsign of station being worked; RS(T) and serial number sent by the heard station; points claimed and new multipliers.

All logs must be checked for duplicates, correct points and multipliers. They must be accompanied by a list of prefixes worked on each band and a summary sheet showing callsign; operator name/s; address; mode and category entered; number of valid QSOs; points and multipliers on each band; claimed score and a declaration that the contest rules and radio regulations were observed.

11. Electronic submission of entries is encouraged. The required log and summary information is to be submitted in DOS ASCII file format. Please name the files with your call and an appropriate extension, e.g. if ZL2WB submits an all band entry then the log files should be named ZL2WB.160, ZL2WB.80, ZL2WB.40, ZL2WB.20, ZL2WB.15, ZL2WB.10; the prefix file is ZL2WB.PFX; and the summary sheet file is ZL2WB.SUM.

12. Logs are to be submitted via email, 3.5" DOS diskette, or on paper.

Email logs are to be sent to: [contest@nzart.org.nz](mailto:contest@nzart.org.nz)

Logs on paper or 3.5" DOS disc are to be posted to:

Oceania DX Contest Manager, c/o Wellington Amateur Radio Club Inc

PO Box 6464, Wellington 6030, New Zealand.

Please use airmail if you are submitting a log from outside VK or ZL.

All logs must be sent/postmarked NO LATER than 27 November 2000.

13. Awards: Certificates will be awarded to the top scoring station in each category listed under Section 5 for

a. Each IARU WAC continent

b. Each country

Where justified, additional awards may also be made at the discretion of the Contest Manager.

The VK single operator CW entrant with the highest score will be awarded the Frank Hine VK2QL Memorial Trophy and receive an attractive wall plaque for permanent recognition of that achievement.

The Oceania single operator PHONE entrant with the highest score will be awarded the Ron Wills ZL2TT Memorial Cup and receive a miniature cup for permanent recognition of that achievement.

14. Disqualification: Violation of the contest rules, unsporting conduct, taking credit for excessive duplicate contacts, unverifiable QSOs or multipliers will be deemed sufficient cause for disqualification. In matters of dispute, the Contest Manager's decision will be final.

## AR Repeater Link

Will McGhie VK6UU

21 Waterloo Cr, Lesmurdie 6076  
will2@iinet.net.au VK6UU@VK6BBR

# Restoring links in East Timor

## E-mail

My E-mail address has changed due to my ISP being bought by iinet. The old address should still work but I gather it will eventually only work @iinet.

## East Timor

One day back from East Timor and yet another deadline for this column is due. My week spent in Dili East Timor may make for interesting reading, as told from the radio Amateur perspective. An opportunity to help repair Dili's television transmitter and studio link to the transmitter came my way. A friend had already been to Dili and the television transmitter had been restored to basic operation. The microwave link from the studio to the transmitter was not operational and there had been reports that the television transmitter was producing more than one output, interfering with some VHF communications around Dili.

## The Damage

The damage done to the television system in East Timor after the referendum last year was considerable. The Dili transmitter site suffered considerable damage, mainly to the power distribution and some components were removed such as power supplies. However prior to my visit, three days of effort had seen the television transmitter "operational". However, there was no link to the transmitter from the temporary studio, as the microwave links had suffered bullet damage and had been removed for

repair. It was lucky that the transmission site had not been burnt, as much of Dili and other towns had.

Dili is a much larger town than I thought. Flying in from Darwin, you fly across the island, as Dili is on the northern coast. The Island is very mountainous and hazy. Dili is sandwiched between the sea and a 600 metre (2,000') mountain range and the town is spread for about 7 kilometres along the coast by 2 kilometres between the beach and mountain range. The drive from the airport showed the damage done to the town. Most of the concrete houses had been burnt with the roofs falling in. Once the rubble had been removed, all that was left was the walls and the floor. No windows, no roof, no furniture, just a shell. Reconstruction was well under way, but with in excess of 80% of buildings burnt and trashed there is a long way to go.

## Traffic Jams

Dili is a very busy place. With the UN and several Nations in East Timor, traffic jams are a regular occurrence in down town Dili. All sorts of military vehicles and local cars, motor bikes, trucks and push bikes all jockey for "right of way". Right of way means, he that gets there first. Stop signs were being installed while I was there, but many of the locals did not know what they meant so they just drove straight through. Some of the biggest traffic humps I have ever seen were being removed, as they were way over the top. Any speed faster than one km/h resulted in spinal damage.

## Amateur Radio

Communications are everywhere in Dili. There are towers all over the place, bristling with all manners of antennas, most of it new, installed by the various forces. There was even evidence of amateur antennas, but most looked in disrepair. Two metres is used throughout the islands but little of it is amateur radio, so the two metre beams and verticals gave no indication of amateur activity, past or present. A couple of HF antennas looked amateur, along with the odd HF multiband vertical, but they would have to wait until the basics of living have been restored. East Timor is under United Nations administration until a new government is restored and amateur radio could well be way down the list.

## The Transmitter

With only limited time to sort out the television transmitter and studio to transmitter link, we landed in the morning, checked into our accommodation, a 3 by 4 metre box, and headed for the transmitter site, some 10 kilometres by road from Dili. The spectrum analyser showed no spurious output from the transmitter. Other test confirmed the television transmitter was clean. We wound up the transmitter to full power, 2kW, as it had been wound down while it was suspect. Sides were fitted to the transmitter cabinet to improve the ventilation, as they had been removed and were no where to be found. Air conditioners had been installed in the transmitter building but where they were plugged in, there was no power. The power lead was re-run and connected to the 240 volt mains and they were up and running. By the way, did I mention Dili is hot and humid? The air conditioners were considered essential to keep the solid state transmitter happy. The original air conditioners had been ripped from their mounts. The transmitter was up and running at full power with a clean bill



Colour original inserted

of health. The only programming that Dili had had so far was from video tapes driven up to the transmitter site and this was limited to the odd hour or so very day or so. Until the studio to transmitter link was repaired and installed, there was little programming. However a satellite receiver at the transmitter site was fired up and Australia Television connected to the transmitter. Dili had a mixture of Australian soaps and sport.

## The Link

The microwave link equipment was all collected together, some two receivers and three transmitters were found, along with 2-foot dishes and various bits of mounting hardware. Bullet damage was evident to some of the dishes and one transmitter had a bullet through the base plate into the unit itself. All attempts to separate the base plate from the transmitter head unit failed, the two were welded together. The bullet appeared to still be inside as there was no exit hole. This transmitter was put aside as with limited tools we could not fix the unit. The remaining receivers and transmitters all worked, and bullet damage to the dishes and weather shields was repaired.

Two days were spent installing the microwave receiver and transmitter between the temporary studio and transmitter site and it worked. Now programming could come from the studio rather than the limited transmitter site.

## Drive in the Country

With a day and a half to spare, one afternoon was spent driving through the countryside. Our contact in Dili was Ric, the head of Television and he wanted to see how far the television transmitter would go towards another big town to the East. This drive in the country was most interesting. Destruction was everywhere. We visited a television complex about 40 kilometres from Dili that had been burnt until it melted. Steelwork in this once modern installation was bent by the heat. Familiar television equipment, like studio lights, video tape recorders and racks of other assorted television equipment only had the metal parts left. The roof had fallen in and the complete complex was useless. Even the thick concrete walls of the building showed structural damage due to the intensity of the fire. The complete building would

have to be bulldozed and rebuilt. This television complex was next to a large technical collage that also had been destroyed by fire. What a waste.

While out in the country we were on the look out for any houses that had television antennas. Sighting a satellite dish we stopped and walked over to the house and received a warm friendly greeting, with lots of "hello mister". Everywhere you go in Dili you are greeted by "hello mister". It is so popular that a new supermarket just opened in Dili is called the "hello mister supermarket." There are three languages in East Timor, the local language, Indonesian and Portuguese. Ric could speak the local language and we were able to have a look at their satellite system. Nothing worked, as the satellite receiver was only partly connected and there was no antenna for the VHF television. The house had 240-volt power and with some electrical wire, we were able to make a crude dipole and feed line. Holding the "antenna" at head height produced a sort of picture from inside the tin house. As soon as a sort of picture, with sound appeared, kids came from all over. The area had a number of village houses throughout the trees and before long about 20 children and teenagers were crowded into the earth floored tin house. All the time the mother of the house was busy in the next room, the partly outside kitchen, cooking the evening meal on an open wood fire. Smoke filled the whole house and the television was moved outside to get a better picture and move away from the smoke. To excited cries of "Aussi Rules" the kids crowded around the television set watching football. We had to leave and told them the "antenna" needed to be higher and showed how it could be attached to pieces of wood to make this happen. We drove further down the road to a beautiful beach for a brief swim before passing the house on the way back with the television. In the space of less than an hour, the house now had a TV antenna sticking up from the roof, and many children crowded around the outdoor television. I bet the mother was



Will (on the left) and fellow worker Ian with the Dili TV transmitter. The spectrum analyser in the foreground shows how clean the signal is

overjoyed at the large crowd she now had around her house.

## Tropo

A telephone call from ABC Darwin wanting to know was the television transmitter in Dili turned on, and if so what channel was it on? The answer yes and channel 6. "Oh no" was the reply, Darwin is on channel 6 and the ABC is having complaints from viewers that they are seeing interference from various non-ABC programs. Dili is about 900 kilometres from Darwin and sure enough with a water path between the two, tropospheric propagation was the cause. The complete time I was in East Timor it was classic inversion weather, with light winds and a thick hazy layer up to 1,500 feet. Even the ACA rang, but there was nothing we could do. East Timor does not come under Australian telecommunications law. How the decision was made to put Dili Television on the same VHF frequency as Darwin, only some 900 kilometres away across a water path is unknown. The inversion lasted for 36 hours. Time will tell how often this occurs.

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 All times are in UTC

## New 10 GHz World Tropo Record In Europe

As reported last month, Australia's 5 year old 10 GHz World Record, held by Wally VK6KZ/P and Roger VK5NY/P, has finally been broken. The following was lifted from a report in the Israel Amateur Radio Club newsletter.

"On June 25 at 16:51 UTC two German Radio Amateurs broke the long-standing distance record for communication on 10GHz. From the upper floor of a Hotel in Netanya, Israel, Dieter DJ4AM contacted his friend Adalbert DJ3KM on the Italian Island Lampedusa, in the Mediterranean Sea, a distance of 2079 kilometres. The QSO lasted about an hour. Netanya is about 30 kilometres north of Tel-Aviv. They broke the previous record of 30th December 1994 held by VK6KZ and VK5NY who beamed their signals over the Australian Bight for a distance of 1912 kilometres."

"The equipment used by both German hams was identical and consisted of a transverter designed and built by DL1RQ fed into dish antennas with a diameter of 60 centimetres. The calculated gain was 33db using output power of 5 watts. They made lengthy calculations with the aid of maps and GPS's to get the angle right for pointing their dishes, because the dishes have an opening angle of only one-degree. Dieter spent 21 days in Israel but only managed to make the one contact."

The new record is well within VK's sights, in fact the record can be still broken between VK5 (from SouthEast) & Torbay, in VK6, where VK6KZ operated for the 1994 world record. VK3 to VK6 could take that out to 2400 km before having to go further west from Torbay. All that is needed is some propagation this year!! The challenge has been laid down, let's get to it!

## New World 24 GHz Tropo Record In Italy

If 10 GHz wasn't enough, IOLVA reports ... "In reference to my activity I inform you that on June 18, 2000 at 12.28GMT I have made the new record on 24GHz with a distance of 461 km. The QSO was made from M. Maielletta 42°06'N - 14°07' E near Chieti, JN72CD, to M. Pizzoc 46°03'N - 12°20'E near Treviso JN66EB."

"I made the qso SSB x CW with my dear friend Costante IW3EHQ/3. The equipment details are as follows:

IOLVA: Tx 250 mW - N.F.: 1.5 dB - dish: 90 cm - swan neck temperature 8 °C - 2000 m a.s.l. RST Tx: 52 - RST Rx: 519 IW3EHQ/3: Tx 750 mW - N.F.: 1.5 dB - dish offset 85 cm - temperature 18 °C - 1560 m a.s.l. I have also heard I3SOY/3 with a signal of 51 but Paolo didn't copy my signal." ... Silvano IOLVA. Silvano is one of the pioneering Italian operators on 24 GHz; several of his 24 GHz designs have been published in *Dubus* over the past 8 years.

## VK6RSW Augusta Beacon On Air

Don VK6HK reports ... "A new set of 2mx, 70cm and 23 cm beacons has commenced operation from Augusta in the extreme South-West of Western Australia. The beacons operate on 144.562, 432.562 and (temporarily) 1296.555 MHz. The latter needs a crystal replacement and when this occurs a higher stability oscillator will be added, to maintain the nominal 1296.562MHz. The antenna systems are yagis for 2 and 70cm with a 4 x three halfwave length dipole and backscreen array for 23cm. Lobes are radiated North and East from Augusta, with about 50 watts ERP on all bands in each direction. Keying is VK6RSW AUGUSTA in FSK Morse in

all cases. Mark is the high frequency on the nominal ".562."

"The beacons are licensed to the WA VHF Group and were installed on Monday 4th September 2000 by Wal VK6KZ, Cec VK6AO, Bruce VK6BMD and Don VK6HK. The site has been kindly donated by Mr. Lance Collins. Any reports, particularly on the West-East path, would be most welcome to [patndon@cygnus.uwa.edu.au](mailto:patndon@cygnus.uwa.edu.au)" Don VK6HK

## 916 - 928 MHz ISM Band. Can we share?

The loss of 420 - 430 MHz, to amateurs around Perth, is now a forgone conclusion. More so further evidence is mounting of use of frequencies around the Olympics around 445 MHz (not an image of 420 MHz I am told!). The ACA database is a little sketchy on this and other anomalies. With ever increasing pressure being felt on our various bands above 300 MHz, there are now real opportunities for "bargaining" compromises against our losses.

The idea has been floated that we do some tradeoffs to retain other parts of the 430 - 450 MHz band. Another idea that has been suggested is gaining privileges to some or all of the 916 - 928 MHz ISM band. This band sits just below the current Mobile phone GSM band and is used for ISM and unlicensed low power devices, not dissimilar to our 2.4 GHz allocation. It perhaps would follow that we could use 916 - 928 under similar conditions. There are a few paying licenses in this area, but even part of this band would be of benefit as 916 MHz sits well between 432 & 1296!

The USA hams have had access to a segment above 902 MHz for some time now. In the US, 900 MHz it has become a true experimenters band, fuelled by the

never ending availability of ex analogue mobile phone and sundry base station equipment running 50 or more watts. Both narrowband and ATV has a good following. Even transverters are available. Maybe we would be lucky enough to get a segment wide enough to run Narrowband and an AM ATV channel? Start lobbying now!

## 50 MHz proving to be Sluggish

The title says it all. Mid September is here and not much into the lower parts of VK. Summarily not much Sporadic E about to assist. Limited 1 & 2 hop DX in Northern VK as well as ZLTP from late August 2000. By next month one would hope it is on again.

David Vitek, Adelaide, SA has sent in his log for 30 – 60 MHz for the June through August, 2000 period confirming MUF's rarely rose above 35 MHz on F layer, although mid winter Sporadic E was quite prevalent. The various solar Flares created a number of bumps but little co-incidence between Es and F layer for extending 50 MHz. If anyone would like a copy of David's log, please drop me a line.

Eric VK5LP reports ... "John VK4KK advised that he has received his Six Metres DXCC No. 267 dated 13 June 2000. This is the second DXCC for VK (No. 1 being VK3OT) and the first in VK4. He also received an additional DXCC certificate numbered 36,000+ being his position in the world total of all such certificates awarded! Our congratulations to John for his efforts."

"John also advised that as of September 2000, PY5CC has confirmed 195 countries worked on six metres. He has hopes of reaching 200 countries but is finding it increasingly difficult and still has not been able to work YJ8. Another good effort." Eric VK5LP

On Higher bands, up North, Glenn P29XXX reports on 08/09/2000 ... "For the last 3 days, the Cairns FM broadcast stations have been noise free in Pt Moresby. We have a local link receiver on 89.1 MHz and an associated transmitter on 105.1 MHz. This setup is used for O/B work for one of the local broadcast stations. It is sited on Burns Peak - a local hill here. For the last few days, we have been able to drive around Moresby and listen to a Cairns community FM station that just happens

to be on the same freq. as our link-input (89.1). Make a nice change from the local stations!" ... Glenn P29XX/VK1XX

Glenn VK4TZL reports ... "At 0549, on 07/09/2000 worked P29PL on the Gladstone repeater whilst mobile in Maryborough (linked through to 146.800 that I was on). Then worked him again at 0608 from home QTH on the Moresby or Mackay repeaters (147.000) Just after 5pm local, worked P29PL mobile on his way down from Burns Peak through the Mackay Repeater and then on Anti 5/9. Also worked VK4FNQ, 4AIV and 4JKL on 147.000. 93.1 FM from Moresby is breaking through here as I write at 0729." ... Glenn VK4TZL

## Phase 3D Launch Update

AMSAT-DL Vice-President Peter Guelzow, DB2OS, recently informed ANS that the Phase 3D satellite "will be launched at the end of October or beginning of November." As ANS has earlier reported, Ariane 5 launches had been postponed until several components could be checked aboard the launcher. DB2OS reports that Arianespace re-assigned the launch numbers. "There will be two more Ariane 4 and one Ariane 5 launches," said Peter, "but because Arianespace did not yet publish the new official launch manifest, I can't be more precise."

DB2OS told ANS to expect more news after the AR-506 launch, currently scheduled for September 14th.

"We are indeed on AR-507," said Peter, "and the Phase 3D launch campaign should start on September 11th in Kourou!" ... AMSAT NEWS

## Microwave Primer Part Five 5.7 GHz

The 5650 – 5850 MHz (or 6cm band) is an interesting one that we share with several other users. It is an ISM band, much like 2.4 GHz, providing us at least one user who has lower priority to us on the band!

Construction techniques are similar to that employed on the lower GHz bands. The "size" of various components is still quite manageable, even if you have less than ideal eye sight! Several Watts of power can be had without much effort with easily available surplus IM5964 IMFET's. Despite large amounts of Surplus equipment 5.7 GHz, until very recently, has been another neglected

band. Perhaps bypassed by many who went straight to 10 GHz.

For narrowband portable work, I think 5.7 is perhaps one of our best performers. On many occasions over many paths 5.7 GHz has returned the strongest signals when compared to 2.3 & 10 GHz. A 600mm (2 foot) dish provides about 26 dB of gain with a manageable 5-degree beamwidth ... more than sufficient for portable work. That with 4 Watts will give you 1 kW ERP about the same that can be achieved portable, on 144 MHz, with 100 Watts into an 8 or so element beam.

For Wideband work, 5.7 offers another 200 MHz of spectrum that can be used in much the same way as 3.4 GHz. The availability of surplus 5.9 – 6.4 GHz converters, multipliers, filters and antenna feeds is a bonus. The best source of all of this equipment is the metal recyclers, as Telstra and other utilities progressively dump old microwave bearer equipment. Go digging and you will be surprised what you find!

So where do you start? Several transverter designs are available. The DB6NT Mk1 design and the N1GHz design are the most popular. They can be built from locally available component/kit sources. It uses plumbing "pipecaps" for the 5.7 GHz resonators. The DB6NT design provides about 200mW of output power, useful by itself for much work. Adding an amplifier with 2 stages using IM5964 IMFETs will give you 4 Watts.

The MK1 design requires direct Local Oscillator drive at 5.6 GHz. This adds a bit to the complexity of the project. LO drive can be obtained by using an external multiplier following a 1 or 2 GHz Local oscillator such as the G4DDK designs. The DB6NT Mk2 design is better, with the complete local oscillator on the one PCB. This design is a bit more expensive to make as it uses R4003 ceramic-based PCB and several harder to get helical filters. Kits are available for the MK2 from DB6NT himself.

The N1BWT/GHz design is an interesting one. While the DB6NT design makes use of Gasfets for all active devices, this design uses ERA series MMIC's. The same style of pipecap filters as the DB6NT design are used. The power output available is in the region of 20mW's, limited by the specs for the ERA3 PA MMIC. One big advantage over the MK1 DB6NT is the LO

requirement.... 20 mW at 560 MHz, 1/10<sup>th</sup> the final LO frequency. Several easy options are available to generate a suitable LO signal.

Both transverters can be used with either a 144 or 432 MHz IF. I have started to use 432 MHz for all transverters over 5 GHz. Apart from avoiding interference from normal 144.1 MHz operation while portable, 432 MHz relaxes the image filtering required especially on 10 GHz and above. And if you use 144 MHz for 1.2 or 2.4 GHz you can run two bands at once for aiming or talkback. If you are lucky enough to have a good spare 432 MHz set for use portable it is well worth setting up.

Suitable antennas are simple to make. For short-range work a simple Horn type antenna can be made to give you 20 dbi of gain. For more gain either a prime focus or offset dish can be used. A prime focus dish is easy to aim however some feeds can give poor to mediocre results with efficiencies of around 35 - 40%. This is most apparent on deep dishes being fed by dipole or "penny" type feeds. A better solution is perhaps a chaparral type feed although the

increased blockage from the chaparral "rings" may be the ultimate gain limit on a 600mm dish.

Alternatively, easily obtainable 650mm offset dishes can be used. When fed with a correctly dimensioned horn type feed, efficiencies can approach 65%. That coupled with the feed being out of the line of fire can mean up 2-db difference for no extra effort. The only downside is finding the horizon as most dishes are offset by up to 29 degrees! A simple method is to bolt a spirit level or sighting tube to the side of the dish so you can quickly find the correct angle when you are in the field.

Designs for suitable dish feeds are available in several publications, most recently the Microwave Update series available from the ARRL. Next Month we move onto 10 GHz. The pressure is on for VK to get the World Record Back. Time to stir up more interest on 10 GHz!

## In Closing

Gordon VK2ZAB reports working his 23cm Grid Locators # 17 & #18 respectively on the 14/15<sup>th</sup> of September ... "14/9 Ross #17 VK2DVZ was portable

at Cape Hawke near Forster. From 0248Z until 0313Z his 23cm SSB signals here were 5/5 with QSB. Ross gave me 5/3. He was running 10 watts to a 23-element DL6WU type Yagi. Grid Square is QF67[gs] and is only 220km from here, QF56[nj], but had not been worked before simply because there was nobody there. 15/9 23cm Locator #18 at 2327Z contact made on 23cm SSB with Ross VK2DVZ portable just north of Gloucester in Grid Square QF58 [xa]. Signals 5/1-5/3." Gordon VK2ZAB

John VK3KWA reports ... "I have just finalised the dates for the spring and summer VHF contests. They are Spring Field Day - November 4/5. Ross Hull Contest - Dec 26 - Jan 14. Summer Field Day - Jan 13/14" John VK3KWA

Please note that I have a new Phone number at the top of the page. The old number will redirect for some months until the changeover is complete. I'll leave you with this thought.. "A Diamond is a chunk of Coal that made good under pressure"

Till next month  
73 David VK5KK

ar



A G Loveday VK4KAL

## Your bands are being stolen! What will YOU do?

For some time I have been urging Amateur Radio operators in VK to join the Intruder Watch, and submit observations of intrusions into our legal operating bands. Sadly this has been ignored. Probably 99.99% of amateurs think the problem is of no consequence or that it will go away, so they sit on their hands and do nothing, apparently never even listen.

Well I've got some disturbing news for you all. I have in front of me seven A4 sheets of intrusions listed for the 40 metre band. Maybe all are with the 'blessing' of the ITU. The info comes from our own ACA monitoring station at Quoin Ridge, so it is legit info. These are Commercial stations, mostly AM B/C, but have a few FX type of transmissions for good measure. Obviously the amateurs have not made themselves heard through the

monitoring service, not just in VK but all regions. China has gained the most frequencies, with Vietnam in for their share along with THA and BGD.

The Frequencies are spaced through 7.000 to 7.060 MHz, as under: 7.000 - 7.010 - 7.015 - 7.016 - 7.020 - 7.025 - 7.026 - 7.028 - 7.030 - 7.035 - 7.040 - 7.042 - 7.050 - 7.055 - 7.058 - 7.060 MHz spot freqs but the total operations will seriously hamper amateur operations, there being 255 transmx possible. I have been supplied with Geo coordinates, if anyone is interested.

I am at a loss to understand the attitude of amateurs. I can remember getting up to 10 pages of obs each from 30 or more obs per month. Maybe I've been in this job too long? But I do think our organisation could take a more positive attitude from the top down.

ar

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# HF Predictions

by Evan Jarman VK3ANI

34 Alandale Court Blackburn Vic 3130

These graphs show the predicted diurnal variation of key frequencies for the nominated circuits.

These frequencies as identified in the legend are:-

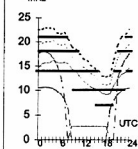
- Upper Decile (F-layer)
- F-layer Maximum Usable Frequency
- E-layer Maximum Usable Frequency
- Optimum Working Frequency (F-layer)
- Absorption Limiting Frequency (D region)

Shown hourly are the highest frequency amateur bands in ranges between these key frequencies, when usable. The path, propagation mode and Australian terminal bearing are also given for each circuit.

These predictions were made with the Ionospheric Prediction Service program: ASAPS Version 4

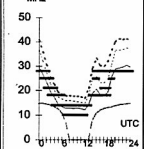
## Adelaide-Auckland

Second 2F14-21 2E2 Short 3241 km



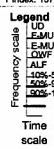
## Brisbane-Chicago

First F 0-5 Short 4361 km



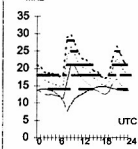
## October 2000

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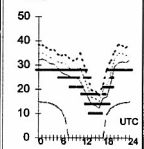
## Adelaide-London

First F 0-5 Long 23755 km



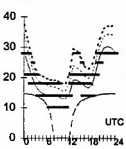
## Brisbane-Honolulu

Second 3F5-12 3E0 Short 7569 km



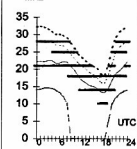
## Canberra-Baltimore

First F 0-5 Short 5938 km



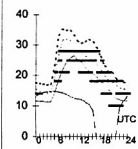
## Darwin-Christchurch

First 2F5-9 2E0 Short 5282 km



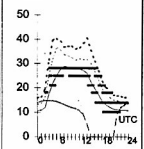
## Adelaide-London

First F 0-5 Short 6269 km



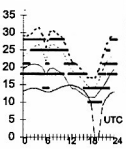
## Brisbane-Moscow

First F 0-5 Short 4071 km



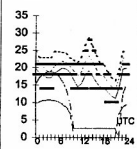
## Canberra-Dakar

First F 0-5 Short 7361 km



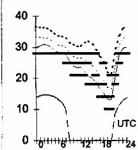
## Darwin-Manila

Second 2F14-28 2E2 Short 3196 km



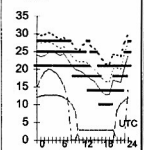
## Adelaide-Tokyo

Second 3F5-12 3E0 Short 7855 km



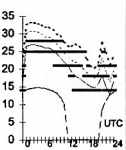
## Brisbane-Singapore

Second 3F9-17 3E0 Short 6147 km



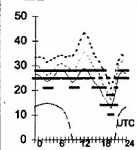
## Canberra-New Delhi

Second 4F5-12 4E0 Short 0347 km

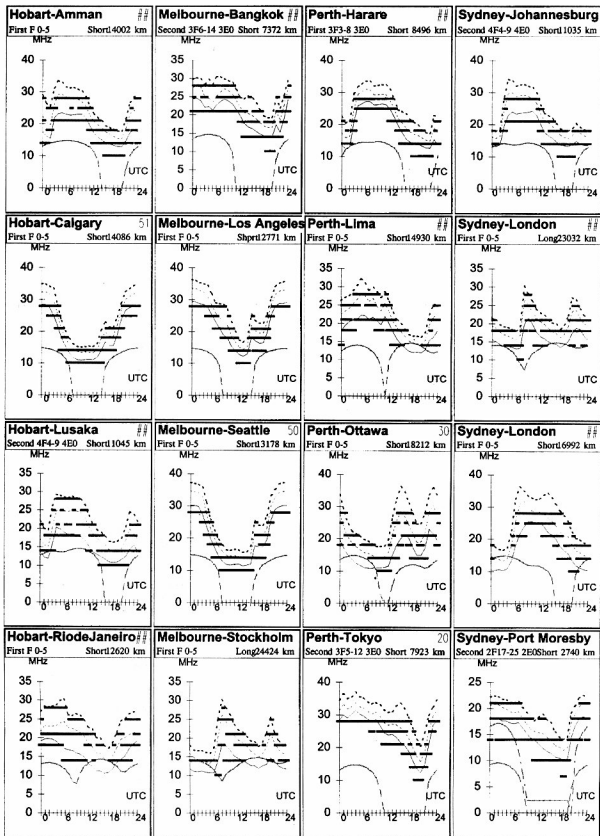


## Darwin-Osaka

First 2F5-14 2E0 Short 5262 km







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Novice Notes Online: <http://www.alphalink.com.au/~parkerp/nonline.htm>

# HamBabble

## Making sense of what we hear!

By and large, amateurs are an articulate, well-spoken and intelligent lot. However when tuning the bands, one sometimes hears some strange contortions of the English language. This twisted terminology perplexes the newcomer and grates on the ears of the experienced operator.

Neither necessary to explain a technical concept nor useful to express a new thought, insight or observation, there are various terms and expressions unique to radio amateurs. Their inappropriate use makes amateurs sound strange to the uninitiated and hinder clear communication. If you've just got on the air, read this article and avoid the phrases listed unless you really mean them. If you count yourself as one of the uninitiated, treat this list as a guide to understand what the babblers on the bands are really saying.

I have attempted to go beyond a simple listing of words to identify specific patterns of communication unique to amateurs. For example you will be introduced to *Amateur Action words*, *Intention Phrases* and *Sign-Off words*. Many of the terms used by amateurs can be placed into one of these groupings. Their existence may tell us something about the personality of amateur operators, who have many more words to announce their intention to end a conversation than to welcome a station with which contact has just been established. Then there's specific patterns such as *Lengthening words* and *Regurgitating Rogers*. The topic is ripe for further study - is there a psychologist in our ranks who is willing to conduct a content analysis of amateur communication and report the findings?

The following list has been derived from both personal observation and suggestions from others. Additions would of course be welcome and can be sent to the author.

**Affirmative:** Yes. An example of a *lengthening word*. Also see *negative*.

**Amateur Action words:** Except when they are trying to climb towers, amateurs are generally a sedentary lot ('Another cuppa - thanks Dear'). However on air hams like to convey the impression of being on the move - hence the constant use of 'going' as in 'going clear' or 'went' as in 'went QRT'. *Getting out* and 'coming back' are other *amateur action words* occasionally heard.

**Best 73:** 73 means best wishes, so best 73 must mean best best wishes! It has entered such common use that complaining about this is probably futile.

**Break (Break):** An abrupt and impolite way of interrupting a conversation already in progress. It's much better to simply insert your call sign in the breaks between transmissions that all good operators leave.

**Breaker:** An import from CB. Even worse than *break*. Fortunately rare on the amateur bands.

**Device:** George Orwell's *NewSpeak* replaces established terms with specific meaning with general terms of less specific meaning. The result is awkward communication that doesn't get to the point. The word *device* is an example of this misuse. Someone who asks if they are 'making it into the *device*' really wants to know if they have a decent signal through the repeater. Repeater is not much longer to say than *device*, but carries a more specific and accurate meaning.

(see you) **Further down the log:** HamBabble for later. Remains popular, even though most amateurs don't keep logs nowadays. *Further down the curly cord* or *further down the power bill* are variants, possibly borrowed from CB. All are common *sign-off words*. Adding 'will' converts them into *intention phrases*.

**Getting out:** Transmitting and being heard. An SWR reading of 1:1 does not always mean that you're *getting out*. Your coaxial cable might be very lossy, or you're transmitting into a dummy load.

**Go:** A terse contraction of 'go ahead'. Occasionally used on the amateur bands. A variant is found on 27 MHz, where the 'o' sound is extended and raised in pitch. It's quite entertaining - have a listen one day!

**Going:** Another *amateur action word*. Unless you're mobile, you're not going anywhere! Why is it that amateurs are often 'going clear', 'going QRT', or, heaven forbid, 'going thataway'? Often turned into an *intention phrase*, eg 'will go clear', etc. Over-used.

**Intention phrases:** Amateurs often prefer to say that they intend to say something rather than actually saying it. What's wrong with us - is the overuse of intention phrases an unrecognised form of mike-shyness? *Will say 73* is the most common intention phrase you'll hear, closely followed by 'will go clear' - also an example of an *amateur action word*.

**It:** What is it? I don't know. Ask those who are always handing 'it' over to you or putting 'it' down. Once you have the answer, let me know.

**Lengthening words:** Often used in phonetics – most commonly Victor Kilowatt rather than Victor Kilo. Also *affirmative* and *negative* rather than yes or no. Presumably the repeated consonant sounds in the longer words kicks the needle on the linear amplifier higher up the scale. The average power is higher and the signal cuts through the static better. When said very quickly with non-standard phonetics and the speech processor wound up you will succeed at making yourself as unintelligible as any other DX hound on 20 metres.

(VK....) **Listening:** A weak euphemism for calling CQ used on VHF/UHF FM. Common on repeaters for no logical reason and even sanctioned in published operating guidelines. Like *intention phrases*, it's another example of amateurs not saying what they really mean.

**Negative:** Does not only mean the black power lead on your transceiver. Like *affirmative*, it is an example of a *lengthening word*. *Negatory* is the CB variant, almost extinct these days.

**Over and out:** Though popular in movies, these two words mean two different things, and should never be used together. 'Over' is an invitation to transmit. 'Out' means 'clear', QRT, 'pulling the big switch' or any of a multitude of other terms.

**Over words:** When conditions are good and operators know each other's voice and intonations, the term 'over' can be dispensed with. Over isn't the only word used to pass it to the other station – some use the equally respectable 'go ahead' or the in-your-face 'back'. Some HF DXers say 'over over' (said slowly), which may have some merit when signals are weak. See *Lengthening words*.

**Personal:** Normally pertains to matters that are private or not of interest to other people. However some newcomers use it as a jargonish alternative to the plain 'name'. *Handle* is similar, but is more accepted in amateur ranks than *personal*, which is popular on CB. However not everyone likes *handle*;

heard recently on 40 metres was the comment 'I don't have a *handle*, I have a name'.

**Place words:** If amateurs are going to be constantly on the move (see *amateur action words*) it makes sense for there to be places to move between. That's why there is a need for the amateur lexicon to feature the words 'here' and 'there'. 'The name here is Bob'. Does Bob carry a deed poll form in his pocket and change his name when he goes somewhere? If not, the 'here' is superfluous. The famous British spy did not say 'The name here is Bond - James Bond'. Neither should you.

**Put it down (with):** Something your vet might advise should be done with your ailing dog. However it's yet another sign-off word. Presumably the 'it' is a hand microphone, and you're *putting it down* when you finish. Also see *it*.

**QRZ the breaker:** An ugly embellishment of plain old QRZ? Who is calling? Is the plain language version?

**QSL:** The meaning of this term has broadened from the original acknowledgment of receipt of message (presumably one does not have to understand the message content as in *roger*) to almost a synonym for yes or *affirmative*. 'Are you running 100 watts?' 'QSL QSL'. Also see *roger* and *regurgitating roger*.

**QSL question:** We don't seem to send as many QSL cards as we used to, but QSL remains popular in amateur parlance. QSL is sometimes appended to yes/no questions to which the answer of QSL is desired. Example: 'Your QTH Perth, QSL?' When signals are poor, stations may go through several iterations of repeating callsigns to each other until 'QSL QSL' is heard, which means that stations have received each other's callsign correctly, or are too lazy to care. Given that the meaning of QSL relates to acknowledging receipt of messages, the *QSL question* is quite legitimate and is probably not true HamBabble. It only appears here because it's overused at times. A close relation is the *roger question*.

(Can I have a) **Radio check?:** A question

asked by those who would like to know if they are *getting out* but are uninterested in holding a full conversation with those on the frequency. The usual response is 'you're working'. The question is common on CB, where it probably fulfils a useful role on a busy repeater. Use on the amateur bands identifies the questioner as either a pirate or someone who hasn't listened much before talking.

(the) **Regurgitating Roger:** It's a good idea to confirm salient details with your contact when conditions are poor, but occasionally people go overboard, even when signals are strong. Sometimes you hear almost a playback of your last transmission, punctuated by *roger* between each item. Example: 'Roger your name is Peter, roger on the QTH, roger that you're running ten watts, roger on the FT-301S, roger on the new dipole, roger on the 15 degrees, roger that you're off to work soon, et cetera'. It's boring, repetitive, and tells you nothing you don't already know. The 'regurgitating QSL', is used in a similar manner.

**Roger:** Message received and understood, but also used to mean yes or affirmative. It's not unlike the CBER's 10-4, use of which has diminished greatly since the 1970s. See also *regurgitating roger*.

**Roger question:** Like *QSL*, *roger* is used as a question if given a questioning intonation at the end of a transmission. This can sound quite odd, as in 'Your name is Justin, roger?' Those using the *roger question* appear to invite their contact to reply by saying either *roger*, *roger*, *affirmative* or *negative*.

**Roger dodger:** A pretentious version of *Roger*. Let's kill this one off, *roger?*

**Roger that (or Roger there):** Just plain *roger* will do.

**Romeo:** Part of the phonetic alphabet for the letter 'R'. However it's also misused to mean *roger*.

**See you:** Unless you use amateur television, saying that I'll *see you further down the log* can't possibly be true. In radio talk, when you speak to someone, you 'see' them.

**73s:** 73 is an old telegraphic abbreviation for best wishes. Is 73s twice as good? If so, should we wish

people 146 to save them from having to do the mental arithmetic themselves? A variant is 'seven-threes', to which the correct reply should be 21.

**Sign-off words:** Of any fraternity in the world, radio amateurs must be the one with the largest number of words that mean ceasing transmission or saying goodbye. These are often combined to result in a sign-off that is almost as long as the original contact. An example: '*Will let you go and I'll pull the big switch this end. 73s for now and see you further down the log*'. This is repeated several times in turn until everyone signs. Strangely enough we don't have nearly as many initial greeting words. Does this imply that almost as soon contact is established (confirming that equipment is working but without lowering oneself to ask for a *radio check*) most amateurs are itching to end the conversation ASAP?

**This end:** A crude telephone can be made with two jam tins and a piece of taut string. You talk into your end and your partner hears you at his end. Someone famous once said that radio operates the same way except there is no string. But the ends remain, and amateurs are incessantly

talking about things happening *this end*. See *place words*.

**This way:** A similar *place word* *this end*. According to Ron VK3OM the term appeared to originate with Australian amateurs, spread to New Zealand, and came in to use by UK stations about 5 years ago. If there is *a this way*, there must also be *a that way*. And indeed there is as in 'What's the name *that way*'?

**We:** Hams should realise that they don't just mumble into microphones on the end of curly cords – they are actually in control of an Amateur Radio Station. See the Regulations if in doubt. And any self-respecting radio station must surely have a staff of more than one. If it doesn't, make it sound as if it does. Maybe that's why amateurs talk about their station activities as 'we', as in 'We are operating an FT-1000MP and homebrew linear running 400 watts to a five element monoband yagi at 25 metres. We will QSL via the bureau'?

**Will let you go:** Another *intention phrase*. A series of *sign off words* invariably follows. The implication is that your audience has just been given a long earbashing by you. You've run out of things to say, so

want the contact to end in a dignified manner. What better than ostentatiously parading your consideration for others by generously granting your contact their freedom by uttering '*Will let you go*'?

**Will say 73:** The most common *intention phrase*. Why do amateurs announce their intention to wish others best wishes more often than they actually give these wishes?

**Will sign:** Another *intention phrase*. When spoken, it sometimes sounds like a threat. See *will let you go*.

## Conclusion

Well, we've exceeded the word limit *this way*, so *will let you go*, and pull the big switch *this end*. We'll give you *best 73s*, put it down for now and catch you *further down the curly cord*. Hope to see you on the device again some time soon, *roger*?

## Acknowledgments

Thanks to Ron VK3OM and Keith VK3JNB for suggesting some of the phrases defined here. Also to the babblers on the bands without whom this article would not have been possible!



## VK3BD Robert Charles Krummel 1914-2000

Born in Mount Gambier Bob spent six years in South Africa from 1930 to 1936 where he obtained his amateur licence.

In 1938 he enlisted in the RAAF as a W/T Operator. Bob served as aircrew wireless operator with No 8 Squadron. First in Douglas Dakota (C47B) aircraft and then in Lockheed Hudsons.

Bob went with No 8 Squadron to Singapore in 1940. When Japan entered WW2 he flew on many dangerous patrols before the squadron was evacuated just ahead of the fall of Singapore.

For the rest of WW2 he served in WA, NT, and QLD rising to the rank of warrant Officer Signals.

At the end of WW2 Bob joined the recently formed Department of Civil Aviation in which he served until his retirement, rising to the position of Senior technical Officer (Radio). Within the DCA he was noted not only for his technical competence but also for his compassion and very dry sense of humour.

On retiring Bob ran the morning "Kooka" net on 80m, keeping in touch

withold comrades from No 8 Sqn and other military and civilian friends. This net still operates with George VK3VAM 8Sqn, Mike VK3WW 10 Sqn, Geoff VK3AGF 42 Sqn, Arthur VK3VQ RAAF Wireless units and Ken VK3AKY Army.

Bob was a highly skilled radio amateur and will be sadly missed by his many "on air" friends. He is survived by his wife and two children to whom we offer our sincere sympathy.

Mike VK3WW (Kookascribe)

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- Hamads may be submitted on the form on the reverse of your current Amateur Radio address flysheet. Please print carefully, especially where case or numerals are critical.
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- Yaesu FT 720RVH 2m Transceiver, demountable control panel, S/N O1060774, with unused mobile mount & remote cable kit E72L, \$200. Kenwood SP820 speaker & AF filter unit, SN 821306 \$40. Kenwood external VFO 120, S/N 921295 \$60. Morse keys, small PMG 1942 \$20. Hi-Mound HK 707 \$30. AOL desk microphone, cardioid dynamic model UD-112 50k ohms \$30. Alii EC. RF thermocouple ammeters (6) all tested OK on DC, 0-0.3A Palec, 0.5A Weston, 5A Alii Min., 8A G E \$10 ea. All gear open to offers. AF Sig. Gen. 10Hz-550kHz 5 band, 6 valve, Wien Bridge, built-in VTVM, mains op (my home brew 1952), working, free to good home, heavy, new owner collects! Keith V3K2XN QTHR Sydney (02) 9489 0304. Email [damdard@bigpond.com](mailto:damdard@bigpond.com)

## WANTED NSW

- Two metre linear amplifier must be as new minimum 150 watts with preamp complete with H/Book box etc. also Terlin Perth plus mobile antenna with mounting etc. A.Walsh Phone (02) 4861 2092 anytime.
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- Kenwood TS50 Transceiver all bands plus 6m, with power supply, brand new with manuals \$1350 or near offer. Owner ill. Serial Number 60800 810. In first instance ring Ken (07) 5548 2293 QTHR
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## WANTED QLD

- Keyboard for Decstation 5000 computer. Any one of the following will do: LK401, LK 201. A keyboard from a VT220 or later terminal will do. The keyboard has a 4 pin 'RJ' style connector. Malcolm VK4ZMM (07) 3298 5454.
- Article on EA Tx pre 1965. Has 6 band Geloso 4-104 tuner CB band on band 2. Also info on small linear with 2 line output valves and 2 power transformers for 115 and 230 volt and EEB on circuit boards. John VK4DJS QTHR (07) 4091 2705

## MISCELLANEOUS

- If you got your licence before 1975, you are invited to join the Radio Amateurs Old Timers Club. A \$2.50 joining fee plus \$8.00 for one year or \$15.00 for two years gets you two interesting Journals a year plus good fellowship. Arthur Evans VK3VQ or Allan Dobie VK3AMD can supply application forms. Both are QTHR in any Call Book
- The WIA QSL Collection (now Federal) requires QSLs. All types welcome, especially rare DX pictorial cards, special issue. Please contact the Hon Curator, Ken Matchett VK3TL, 4 Sunrise Hill Road, Montrose Vic 3765, tel. (03) 9728 5350

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Note 1 Views expressed in letters are those of the authors and do not necessarily represent the policy of the WIA.  
2. Some of the letters have been shortened to allow more letters to be published.

## Re Evolution of an antenna farm

Further to my letter to the Editor published in *Over to You*, *Amateur Radio* August 2000 I have to inform readers that telephone advice from Bernard, the builder of the tower, is that he designed the tower for 160 km/h winds and had the drawings checked by a professional engineer before getting Council approval. Regardless of whatever reservations I may have about the rigid frame design used, readers should know of this information as I do now. From what Bernhard has said to me the tower is well-designed and perfectly safe for the purpose and he is justifiably proud of his effort, something which I did not fail to notice in his article of the May 2000 issue.

Geoffrey Coombes VK4GWC

## Band Threat

It took a bit of plotting and plea bargaining to get my XYL to agree. I ordered the rig through my local Ham store and within a few I was able to collect this miniature of a modern marvel!

A handheld VHF/UHF transceiver, no bigger than you average hand microphone. Magic I thought, so lets try it out on a repeater or two.

I triggered 9 repeaters around VK3 but not a soul responded!

I hit 5 repeaters on VHF and 4 on UHF and I nearly gave up when a VK3HIS came back via the tenth repeater. Thanks Steve; if it hadn't been for you I would have taken the rig back... hi!

My point is this: if we don't make an effort to use those bands the commercial interests will! At the moment our Victorian Division is responding to the Western Australian Government which

wants the lower end of our 70 cm band as primary users.

The 70 cm band has been partially nabbed for the Olympic games and so it goes.

Have a look at the advertisement in the latest catalogue from a prominent electronics store a walkie talkie operating in "the less crowded 433 MHz UHF band".

Come up on air lads before its too late!

M Morris VK3GMM

## Chesterfields revisited

The recent DXpedition to the Chesterfields is not the first time radio messages were sent from that QTH. On 4 September 1941 Catalina A24-3 surveyed those islands looking for a suitable site for a seaplane base. I was the senior W/T on A24-3 and while airborne over the islands I sent to the RAAF HQ at Port Moresby, by CW, a preliminary report of the survey results. That, I believe, justifies my claim to be the first radio operator to send a message from the Chesterfield Isles.

After a first light take off from Noumea we arrived at the Chesterfields about midday. The survey consisted of a wave top fly over in several directions to judge take off and landing distances and to take photographs. A landing was not possible because the lagoon was occupied by a pod of large whales which ignored our presence and obviously had no intention of giving way to intruding flying machines.

The survey proved the site suitable for limited flying boat operations but the RAAF shelved the plans project after considering the final report. Future DXpeditions could only use a flying boat

as transport. The small lagoon is part enclosed on three sides by reefs and a sand cay and is reasonably sheltered from most wind directions.

It would be necessary to persuade the whales to find somewhere else to do what they were doing.

It was interesting to read about the DXpedition's difficulty in finding exact positions. The captain/navigator of A24-3 reported position errors on Admiralty charts used and also an uncharted wreck. Some more recent charts don't agree about the position. Even GPS is useless if charts are inaccurate.

The radio (wireless) on A24-3 performed excellently as always and did the job as well as any modern equipment. The TX was an 8 channel Bendix TA 2J with 6 HF channels and 2 MF channels. The power input was 100 Watts and the aerial was a sorta Windom. The aerial was V shaped; the apex anchored to the tail fin and the ends anchored to each wing tip. The feeder was a single wire connected one third the arial length from the starboard wing tip and to a hull feed through insulator on the starboard side.

The Rx was a Bendix RA 1B: "they don't make them like that anymore". RX and TX supplies were genemotors; 24/240V for the RX and 24V/1000V for the TX. These were conveniently located for use as operator foot warmers.

The stations available to accept messages were, aeradios at Port Moresby distant 951Nm, Rabaul distant 1013Nm and at Tulagi distant 653Nm. Rabaul aeradion accepted my message to QSP Moresby. Tulagi was probably skip and Moresby was probably at morning tea; the Pacific war wasn't serious at that time. The frequency used was 6540 kHz.

Lindsay Lawless VK3ANJ

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